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PREHISTORY OF THE
MIDDLE CUMBERLAND RIVER VALLEY:
THE HURRICANE BRANCH SITE (40JK27),
JACKSON COUNTY, TENNESSEE

Archaeological Report 68

Edited by

Tom Dillehay, Thomas W. Gatus
and Nancy O'Malley

CULTURAL RESOURCE ASSESSMENT PROGRAM
DEPARTMENT OF ANTHROPOLOGY
UNIVERSITY OF KENTUCKY
TECHNICAL REPORT

ARCHAEOLOGICAL INVESTIGATIONS INTO THE PREHISTORY OF THE MIDDLE CUMBERLAND RIVER VALLEY: THE HURRICANE BRANCH SITE (40JK27), JACKSON COUNTY, TENNESSEE

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The Hurricane Branch Site may be characterized as a multi-component site which has been sporadically visited ax by Archaic cultural groups, but most intensively occupied in the Middle Woodland and briefly in the late prehistoric period.

At this site the Archaic affiliations tend to be dominated by southerly influences. Woodland affiliations continue to be southerly in nature with strong influences from the McFarland/Owl Hollow complexes of the Upper Duck River in southern Tennessee and the Wabash River Valley of Illinois. Hopewellian influences are so sparse as to be virtually negligible as are the late prehistoric developments.

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PREFACE

Archaeological investigations performed at the Hurricane Branch Site, the Middle Cumberland River Valley, Jackson County, Tennessee, presented a rewarding challenge to and learning experience for our professional staff. The quantity and quality of cultural materials recovered from the site and particularly the state of preservation of organic debris went well beyond our original expectations. However, we were not totally surprised by the kinds of data recovered from the site since the earlier test reports prepared by Butler (1975), Fox (1977), and Olinger (n.d.), provided a good foundation upon which a research design could be formulated to test several propositions concerning sodio-cultural change and continuity in the Middle Cumberland Valley drainage. If there were any regrets resulting from work at the site and the subsequent phases of analysis and write-up of materials, it was the lack of previous research synthesis in the Middle Cumberland River Valley. Obviously, the absence of a good comparative data base to methodologically and theoretically expand our interpretative endeavor presented a limitation. Nevertheless, it was the variable data from the Hurricane Branch Site that allowed us the opportunity to connect the area to other socio-cultural patterns identified elsewhere. It is hoped that the data and interpretations contained herein will not only serve as an important contribution to the prehistory of the Middle Cumberland River Valley but also on a broader regional level as well.

The authors of this report made a sincere effort to investigate the site and analyze and interpret the recovered information within both the conceptual and logistical framework of a mitigation project. We feel that both the assets and liabilities of the investigation reported herein are credited in a large part to the attempted combination of mitigation work and anthropologically oriented research specifically related to both synchronic and diachronic socio-cultural developments taking place over time and through space. It is our hope that the assets of the study heavily outweigh any omissions or misrepresentations on our part.

T. D. Dillehay

ACKNOWLEDGEMENTS

One of the more difficult tasks on a project such as this is to adequately express gratitude to the myriad of people responsible for the completion of the report. This project was a direct outgrowth of a Memorandum of Agreement signed by the U.S. Army Corps of Engineers (U.S.C.O.E), Nashville District, the Advisory Council on Historic Preservation, the Tennessee State Historic Preservation Officer and Interagency Archaeological Services (I.A.S.) of the Conservation and Recreation Service. These agencies followed the spirit of the law as well as the letter of the law and their effort is herein recognized. Individuals within the above agencies that were of particular help include Dr. Will Husted (I.A.S.), Nick Fielder (Tennessee State Historic Preservation Officer's representative) and Danny Olinger (U.S.C.O.E., Nashville). During a meeting in the field in March, 1981, they provided the principal investigators with constructive comments regarding their previous archaeological work at Site 40JK27 and a frank discussion of the nature of the project. Mr. Olinger continued to give support throughout the fieldwork by helping to arrange the loan of field equipment and furnishing background information on previous work in the area and on the site. Other members of the Corps, stationed in Carthage at Cordell Hull Dam, who provided invaluable services include Richard Puckett and Tom Mabry of the Resource Managers Office. They arranged access to a campground and the temporary loan of several tents and other equipment. Additional equipment was borrowed from the Tennessee Valley Authority through Bennett Graham. Dr. Jefferson Chapman, University of Tennessee, Knoxville, graciously loaned us two water screens permitting us to retrieve more data than could have been recovered otherwise. Thanks go to Dr. Patty Jo Watson, Washington University, for the use of her flotation device.

Locally, Baxter Key, Gainesboro Port Authority Director, must be singled out as a helpful and supportive liaison with the community. Baxter's knowledge of local resources and services saved the project supervisor innumerable hours. Although constantly busy with running the Port, Mr. Key made himself available to the project whenever needed. His hospitality and friendliness made a difficult task easier. We would also like to express our appreciation to Troy York and Joe Crabtree of the Citizens Bank for arranging the lease of a storage building for our equipment, cashing the crew's pay checks and for acting as "go-betweens" for the project and the Gainesboro Port Authority Commissioners. A note of thanks is also in order for the local merchants who gave us credit, found hard-to-locate equipment parts, and donated some supplies which allowed the project to progress expeditiously. We also appreciated the opportunity to present a program on the Hurricane Branch project and archaeology in general to the Lions and Rotary clubs.

Drs. Pete Helton, Mel Smith and Larry Knox of Tennessee Technological University took time out of their busy schedules to help the project supervisor compile geologic data and references. Similarly, Guy Weaver, Memphis State University and Pat Cridlebaugh, McClung Museum, Knoxville, provided references and/or copies of obscure manuscripts relevant to the local archaeology. To all of these I express my appreciation for their patience, assistance and spirit of cooperation.

Thanks also go to Dr. Charles H. Faulkner of the University of Tennessee for his comments, criticism and interest in several aspects of the project, and to Dr. Berle Clay, Office of State Archaeology, University of Kentucky, who assisted with the ceramic analysis. Nancy B. Asch, Center for American Archaeology, deserves special thanks for her patience, assistance with the botanical analysis, and manuscript comments. Gary Crites, University of Tennessee, and Richard A. Yarnell, University of North Carolina, also assisted in the identification of botanical specimens. Thanks also go to Dr. David Wolf, University of Kentucky, for analyzing the burials. Julie Riesenweber identified the historic artifacts and assisted in compiling sections of this report. Dianne Driskell was charged with compiling and final editing of the manuscript and was aided by a capable crew consisting of Julie Brent, Connie Dick, Barbara Gortman, Jackie Henderson, Peggy Mitchell, Betty Ison, Jo Staggs and Jim Railey. We would also like to take this opportunity to thank the contributors for their efforts to see this manuscript completed in a timely manner.

Data recovery was accomplished by a dedicated crew consisting of Julie Brent, Charles "Buzz" Glover, John Hanson, Scott Heindrich, Gwynn Henderson, Eileen McCollough, Jim Osborne, Jim Railey, Mike Ray, Dave Sutton, Mel Tyree and Kate Weikel. Although this project was the first for many of the crew, they readily and quickly grew proficient in their work. Crew chiefs Jared Funk, Dave Pollack and Jack Rossen performed admirably in working with the crew, organizing the daily work schedule and executing the data recovery strategy. As usual in field projects, these were not easy tasks especially since they were complicated by frequent and heavy spring rains. It was not surprising, therefore, to hear one of the crew humorously refer to our living quarters as "Camp Mildew." I would also like to take this opportunity to thank our cook, Brenda Dulworth, Roaring River Campground attendants, Dean and Jan Sisco, and our weekend guard, Bill Cox.

There were many people in our office and laboratory in Lexington who deserve a note of thanks also. Ed Winkle and Fran Ciaravino paid the bills and kept the paperwork in order while continuing to funnel supplies to us throughout the field season. John Coyle and his lab crew consisting of Candy Corrigan, Ruth Coyle, James Graham, Kim Owens, Betty Ison, Jon Mabry and Mary Jean Peter did a commendable job processing the artifacts. Terry Tune and John Hanson shared the task of processing several hundred flotation samples.

Last but not least, thanks go to the authors who are solely responsible for the research performed and the data interpreted at the Hurricane Branch Site.

CHAPTER I

INTRODUCTION

by
Thomas W. Gatus

Excavation at the Hurricane Branch Site (40JK27) represent the culmination of four field seasons of multi-stage archaeological and geomorphological investigation. The site was initially surveyed by Butler (1975), tested by Fox (1977) and tested again by Olinger (n.d.). The impetus for the final stage of archaeological mitigation, conducted by the University of Kentucky, was derived from the proposed return of Federal property to the private sector, in this case, from the U.S. Army Corps of Engineers to the Gainesboro Port Authority, Gainesboro, Jackson County, Tennessee. A section of land comprising about 65 acres on the east bank of the Middle Cumberland River Cordell Hull Reservoir at River Mile 358.5 to 359.5 is to be turned into a port facility for the purpose of storing and shipping oil, coal, other mineral resources and commodities down the Cumberland River to processing and marketing facilities on the Cumberland, Ohio and Mississippi rivers (Figure I-1).

The Hurricane Branch Site is specifically located along the east bank of the Cumberland River in a floodplain about 2.2 miles north of Gainsboro, Tennessee. The site is bounded to the west by the river and to the east by a low marshy area and State Highway 53. A thick grass cover and a few trees characterized the vegetation at the site location. The size of the site is estimated at 300 m x 80 m.

The previous work conducted by Butler (1975), Fox (1977) and Olinger (n.d.) prompted the nomination of this area as an archaeological district to the National Register of Historic Places which brought it under the protection of Federal legislation and guidelines, specifically 36 CFR Part 66, 36 CFR 800 and Public law 93-291 and Executive Order 11593, which call for and specify the procedures for the protection and mitigation of adverse impact on cultural resources under Federal stewardship. The final phase of work presented in this report resulted from a Memorandum of Agreement (Appendix A) signed by the Advisory Council of Historic Preservation, the Tennessee State Historic Preservation Officer, the U.S. Army Corps of Engineers Nashville District and the Interagency Archeological Services, Heritage Conservation and Recreation Service.

The 1981 field season was conducted by the University of Kentucky's Department of Anthropology under contract to the Interagency Archeological Service - Atlanta. The University responded to an RFP on August 22, 1980. An initial contract

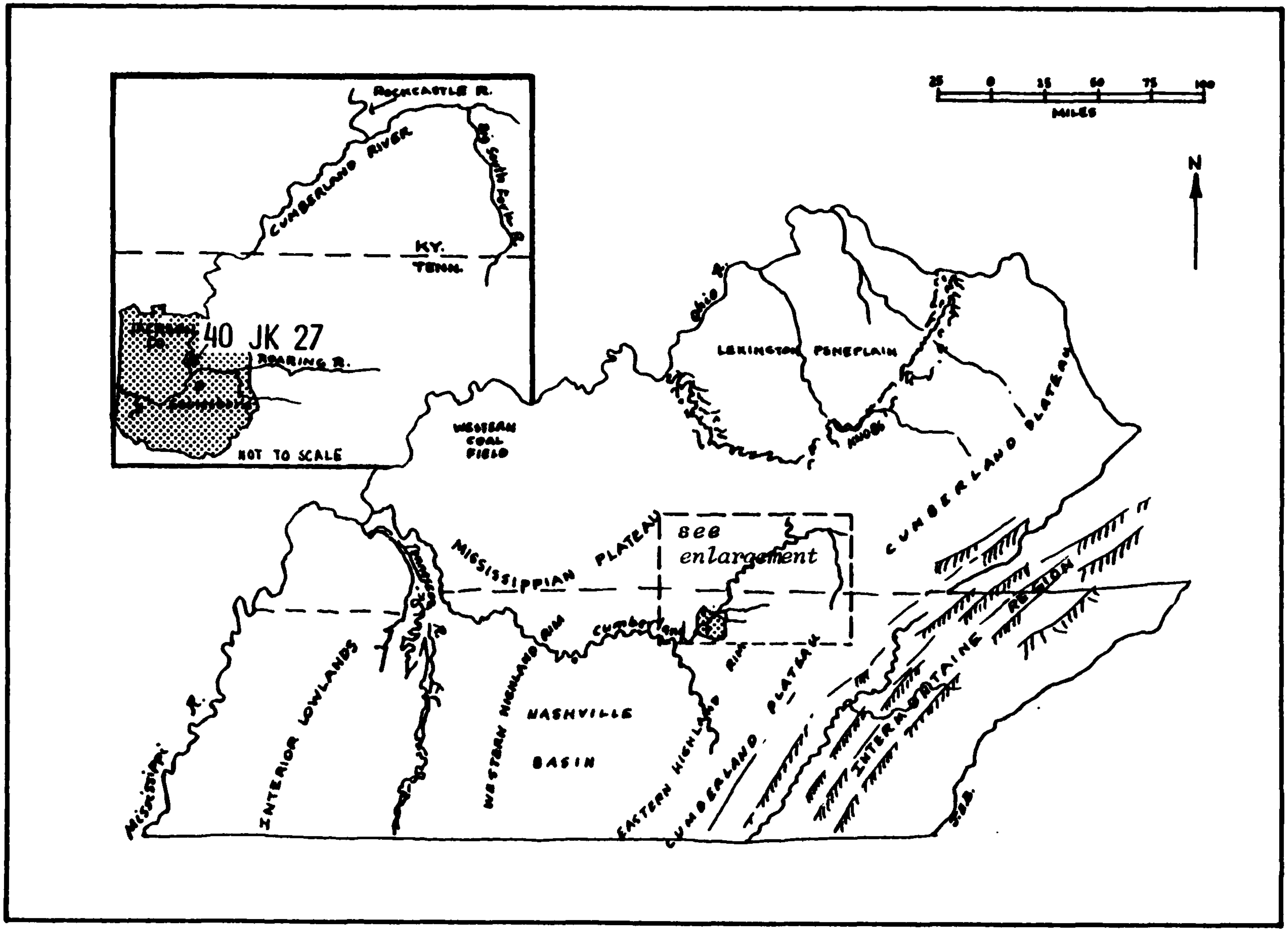

Figure I-1. Map showing location of project area.

was forwarded from IAS on September 11, 1980 (Appendix B). Fieldwork began in May and ended June 30, 1981.

The overall investigations included the operationalization of a background study of previous work conducted at the site, a controlled surface collection, a cultural and geological testing phase which included deep trenching with heavy equipment and hand excavation of approximately 80 cubic meters of soil. Although evidence for various cultural groups from Early Archaic to Mississippian was found, the dominant intact deposits were Early to Middle Woodland. Speaking generally, associated artifacts and features of Site 40JK27 closely resembled those of the McFarland and Owl Hollow phases of the Upper Tennessee, Duck and Elk rivers. A smaller area of Early Archaic activity was also investigated. Preliminary interpretations of the Woodland occupation support the contention that local populations were primarily involved in plant exploitation and food processing as well as hunting and related site maintenance activities. Also, analysis of systematically collected surface debris indicate relatively discrete areas where these activities took place across the site. Floral analysis has documented hickory, black walnut, butternut, hazelnut, grape, goosefoot, sumac and a variety of grasses as well as the presence of cultigens such as squash and maize.

The Hurricane Branch Site is considered to be quite significant because not many Woodland sites have been excavated and properly documented in the Cumberland River Valley. Although the site was not exactly comparable to the large Owl Hollow village sites documented by Faulkner and others in southcentral and southeastern Tennessee, it is nonetheless important that the Owl Hollow pattern is discernible in the Cumberland Valley. Such information proves particularly useful in the broad understanding of Middle Woodland subsistence, settlement and economic networks in the Eastern United States.

This report is divided into eight chapters. Chapter II addresses the overall research design for the project. Both theoretical and methodological approaches are discussed in light of previous research conducted at the site. Chapter III presents a detailed discussion of the prehistoric cultures represented along the Cumberland River, from its confluence with the Ohio River to its headwaters. This discussion emphasizes anthropological and archaeological issues which correlates with the research design. Chapter IV deals with the overall environmental setting and prehistoric economic potential of the site and its environs. The primary ecological data categories included in this section are climate, flora and fauna. Although these categories articulate with other facets of the environment such as the physiography, geology, soils and geomorphology, these latter categories are discussed as closely allied sets of data in Chapter V. Also in Chapter IV, ethnographic and archaeological data relevant to the floral species identified from excavated context at Site 40JK27 are discussed to provide some potential correlates for the archaeological pattern expected at the Hurricane Branch Site. Chapter V will discuss geological data relevant to aboriginal occupation at the Hurricane Branch Site as interpreted through related artifactual and ecofactual data sets. Chapter VI is a descriptive account of the various data sets recovered. Categories including chipped stone, ground stone, ceramics, flora, fauna, features and burials are presented. A few historic artifacts were also recovered and are presented in a separate appendix at the end of the report. Chapter VII is the major integrative section on intrasite cultural phenomenon. Temporal, spatial, techno-environmental variables and activity structure are addressed in detail. Chapter VIII presents a discussion of intersite relations. Comparisons are made between the Hurricane Branch Site and similar sites in the region as well as the regional prehistory in general. The final section, Chapter IX summarizes the significant findings of this report in light of the research design presented in Chapter II. Various appendices which contain supplemental information are included at the end of the report.

CHAPTER II

GENERAL RESEARCH PROBLEM AND DESIGN

by
Tom Dillehay

Introduction

The fieldwork undertaken by the Hurricane Branch project was divided into two main activities, systematic surface collection and excavation, each with specific, but complementary, research problem orientations. The purpose here is to outline the questions we were trying to answer by means of archaeological methods, to describe the research design devised to answer those questions, to discuss how the methods used related to procuring significant data for the research design, and to specify the methods and techniques employed.

The primary scientific objective of conducting archaeological research at the Hurricane Branch Site was to acquire information about the nature of the archaeological resources at the site and their meaning in light of prehistoric socio-cultural problems both on a local and on a regional level of analysis.

During the archaeological mitigation program at the Hurricane Branch Site, several interrelated research objectives were operationalized; the first of which was the utilization of a provisional morphological typology for lithic artifacts as modified from Collins (1975; Collins et al. 1979) as well as the employment of schematic classifications for analysis of ceramics and floral/faunal materials, the evaluation of previously gathered survey and testing data ((Butler 1975; Fox 1977; Olinger n.d.), and examination of intra-site community activities throughout time. In addition, the analysis and interpretation of data collected during the 1981 field season were oriented toward examination of local, regional and general anthropological problems. Though the results of these previous studies at the site can not be considered definitive in any sense, they clearly indicate the research potential inherent in even the early stages (Butler 1975; Fox 1977; Olinger et al. n.d.) of the defined project (see Chapter III for an appraisal of previous work at Site 40JK27).

A second, and major, research concern is to enhance the scientific knowledge of the prehistory of the Middle Cumberland area as perceived through the Hurricane Branch Site. To be sure, more questions (and need) for further archaeological inquiry are raised than answered by the work performed at the site.

Discussions in the following chapters will indicate that the quality of the information collected at the Hurricane Branch Site is often uneven in regard to the major regional cultural historical traditions (i.e., Archaic, Woodland, etc.). Too, the local archaeology of north-central Tennessee and south-central Kentucky is at best spotty and little is really known about the general socio-cultural trends in the region. These deficiencies in information led us to formulate a <u>specific</u>, <u>yet still flexible</u>, research design which could be used to orient the fieldwork toward the acquisition of new data that holds information potential for examination of different levels of interpretation.

Prior to the actual fieldwork it was known from the previous work at the Hurricane Branch Site (Butler 1975; Fox 1977; Olinger et al. n.d.) that the site had a long span of prehistoric occupation from the Early Archaic Period to the Mississippian era. This information, coupled with the quantity and diversity of cultural materials recovered by previous investigators and the potential for good preservation of organic remains from the site, led us to formulate a research design which focused on certain expected socio-cultural patterns of technological, economic and social changes taking place over time (see discussion below). Thus, the research design in the field was aimed at the detection and analysis of those expected patterns of socio-cultural changes in hope that the site would yield data relevant to these concerns. As will be realized in latter chapters, much of the subsequent methodological approach to analysis of the cultural materials reflects this focus.

We must caution, however, that although such a research design may seem to be ambitious, particularly since little is known about the prehistory of the area under study, we believe it is appropriate for a site such as 40JK27 and for the regional level of comparison attained in order to reconciliate the recovered data with known socio-cultural phenomena in the Eastern United States. Furthermore, the research design is believed to be flexible enough to accomodate specific data sets pertinent to examination of any synchronic phases of change or development during the long span of prehistoric occupation at the site.

The concluding chapter of this report will address the issues raised herein and discuss similaritites and differences between the data sets and socio-cultural patterns expected from the site and the actual information obtained during the course of the fieldwork. This level of analysis will be developed in light of the overall contribution of the Hurricane Branch Site to our knowledge of the prehistory of the Middle Cumberland River Valley.

Surface Collection and Subsurface Testing

One of the goals of the controlled surface collection-excavation program was to assess the information potential of different sub-areas (i.e., as defined by surface scatters, topographic features, etc.) in the site. The possible occurrence of the following were of interest:

1) The presence of isolated surface scatters of artifacts.

2) The further presence of undisturbed artifact-bearing strata below the plowzone of the cultivated site.

3) The presence of intact occupation floors or specialized activity areas and associated artifacts.

4) The presence of intact features such as pits, postholes, burials, etc.

5) The presence of preserved faunal and floral materials.

The research project offered an opportunity to examine other questions important for assessing the significance of the archaelogical resources. For instance, special attention was given to the extent to which artifact collections made from the surface of the site could be used to supply data for various research questions concerning cultural remains below ground.

Unfortunately, our study did not encompass a thorough investigation of the present-day, although extensively modified, ecological setting as well as ecofacts which might reflect on local paleo-environmental conditions. A wide array of ecofactual material was excavated and much of this data lends itself to partial reconstruction of the past environment, and is also useful to hypothesize about economic recycling and procurement organization. However, to assess fully this potential, it would be necessary to conduct preliminary studies of a wider present-day and past ecological context in order to discern in a tentative manner spatial and temporal patterns of these economic sources.

Excavation

More specifically, our research design was aimed at testing subsurface features and concentrations of artifacts which basically posited two kinds of activities--occupational loci and/or specialized food or tool producing or maintenance locations.

Sets of feature data variables which might have been of relevance to different activity areas reflective of past cultural adaptations were isolated and recorded according to explicit categories of associated variables. Tests of association between kinds of activities defined on the basis of function and artifact composition within presumed cultural adaptation and environmental variables were carried out. As discussed below, this research design would be optimally operationalized for 1 square meter excavation units, which comprise block excavations within selected areas of the site (see later sections in this chapter for further explanation).

Culture Historical Periods and Site 40JK27

Previous archaeological research at the Hurricane Branch Site (Butler 1975; Fox 1977; Olinger et al. n.d.) has revealed evidence of prehistoric occupation from the Archaic through the Woodland, and possibly into the Mississippian, cultural periods. As discussed in Chapter III, the major cultural developmental span under consideration here is generally conceived to be characterized, for empirical or theoretical reasons, by a socio-cultural change from an advanced hunter/gatherer level of society to a food producing level (i.e., increased economic dependence on cultigens). Initial archaeological work at the Hurricane Branch Site concerned a cursory surface survey and a limited subsurface testing program to evaluate the potential yield of cultural resource information at the location. Not enough archaeological clues were provided by previous work to adequately determine whether the prehistoric populations at the Hurricane Branch Site and surrounding environs ever practiced an mixed economy of hunting/gathering and incipient gardening, or just continuously operated on an advanced hunter/gatherer level. It can be assumed, however, that some of the prehistoric inhabitants at the site did utilize cultigens during their long, yet perhaps sporadic, occupational sequence (at least over 4,000 to 6,000 years).

Perhaps the most important (and archaeologically observable) change that took place during the prehistoric time span are the social and economic consequences (e.g., sedentism) of the initial adoption of and presumably later increased dependence on food cultigens. What we are specifically referring to here is an expected progressive continuum, which corresponds to a set of techno-environmental variables abstracted from changing socio-economic conditions, in the man/plant relationship in the ecosystem. This relationship can be hypothesized to have shifted from generalized to specialized plant collecting (along with hunting) in certain critical biomasses to the manipulation of and subsequent adoption and increased dependence on semi-domesticated to domesticated plants. These shifts are generally not considered to be abrupt but rather gradual, subtle and directive. Since the recovered archaeological evidence showed that the Hurricane Branch Site affiliates both spatially and temporally with general trends, including the use of cultigens, already observed in the prehistory of the south-central Eastern United States, we can assume that similar types of socio-economic events also occurred along the Middle Cumberland River drainage during comparable time periods.

In order to develop test implications for examination of the types of cultural events that took place at the Hurricane Branch Site, it is fundamental that we differentiate the conditions under which these changes could have occurred. The primary conditions that will structure our archaeological expectations will include temporal-spatial frameworks, internal activity structure, and subsistence and technology at the site. The real challenge, however, is to develop questions that can look at these different conditions through time and space at the specific location under study here.

Internal Activity Structure

A principal concern is a diachronic perspective on technological complexity, centralization and differentiation of multiple related economic tasks throughout time and space. Some of the general archaeological indicators that need to be considered are the presence and absence of cultigens, a diversified and more advanced grinding stone technology (and other associated technological implements, such as pottery and chipped stone tools for plant procurement and processing), specialized storage facilities and architectural features indicative of a semi-sedentary to sedentary occupation.

In addition, the type of settlement shifts in different local biomasses and trade and exchange for exotic materials, as well as the total internal activity structure at the site are obvious other important clues for assessing socio-economic shifts. The interpreted degree of dependence on cultigens and subtle shifts in the reflected activity structure at the site and how the site fits into a broader settlement/subsistence scheme on the regional level are also significant avenues of archaeological inquiry into the dynamics and operationalization of prehistoric socio-economic changes along the Middle Cumberland River.

The key here is to relate the expected behavior of populations undergoing these shifts to the archaeologically recovered tool assemblages and activity structure at the site, both for the Archaic Period and for the Woodland Period. Usually these expectations are drawn from ethnographic analogies. No specific ethnographically observed behavioral pattern is, however, an appropriate analog for archaeological consideration of the specific kinds of diachronic changes under study here. Thus, in order to focus on the specific research problems stated above a greater analytical dependance is placed upon the internal structure and composition of the artifactual and ecofactual data from the site.

Overlapping Economic Activities: Plant Foraging and Gardening

In the view provided above, a gradual self-organizing temporal transition from an economic foraging lifeway to a partial cultigen-dependent lifeway would be expected to blend both old and new techno-environmental activities, such as plant collecting tasks and gardening, assuming that both activities could be performed in the same, or at least closely juxtaposed, resource areas. (Overlapping technologies would be another expectation.) This blending process should not be underestimated; because, in a changing economic scenario, the maintenance of specific task organizations is likely to require continued modification through the use of closely related techno-environmental skills that can be performed in similar ecological niches. The initial use of, or increased dependence on, cultigens can be blended into an existing economic activity structure (i.e., hunting/gathering economy) by reconstituting the degree of difference of land use and type of technology employed by each of these activities. Thus, in essence, the existing, or root, activity (plant collecting) would serve as an entering threshold through which the new one (gardening) is engineered into the group's economic organization. The concentration of these tasks in a suitable micro-biomass would be a form of niche expansion, which would incorporate a continuously diverging rearrangement of the man/plant relationship in the local ecosystem (Dillehay 1981:1 and 5).

As the operation increases in complexity, there can be an increasing difference of specialized purpose activities within the economic organization. Concomitant with this segregation of specialized tasks is also likely to be increasing centralization of control functions, such as technologies that are specifically designed to be employed for inclusive food processing tasks or the selection of a specific type of resource zone where both activities can be performed continuously and simultaneously. Let us not forget, for instance, that both plant collecting and gardening can be practiced during the same seasonal round in relatively similar types of ecological niches, such as a river floodplain and surrounding environs. We also need to remind ourselves that there is a common denominator which connects these two different, but potentially overlapping, types of economic tasks; that is, the plants, whether they be feral or domesticated species. Both feral and domesticated plant types exhibit predictable patterns of seasonal availability in species-specific ecological zones. Whereas faunal communities are mobile and not particularly attached to a micro-ecological zone, plants, on the other hand, are characterized by a certain degree of year-round temporal and spatial fixity.

It is also important to consider that probably not all communities in the local or regional subsistence/settlement system were undergoing an _en masse_ shift in all aspects of society as a result of the introduction of cultigens into the economy. We would expect to find that only certain behavioral aspects (perhaps possibly labor organization, seasonality/scheduling, technology, etc.) were experiencing a stronger and more rapid blending effect, while other aspects of the society, such as social structure, ideology, etc., were undergoing time-lapsed alterations which stem from systemic connection to the original threshold task through which the incoming (or new) task was introduced.

Nevertheless, there must be a limit to which this blending of plant collecting and food producing comes into play and begins to affect all other aspects of society. (It is believed to be erroneous to assume that the society in question had already totally re-organized itself to anticipate the consequences of this shift, and thus had made the total _en masse_ organizational change to accomodate the incoming task.) It is the time-lapsed effect of these innovations that are most difficult to verify archaeologically. If we view this process from the approach of purposively blending related techno-environmental tasks, we can attempt to discover archaeologically those specific activities that served as entering thresholds for incoming activities. We can possibly even further detect those other aspects of the society that were impacted as a result of time-lapsed sequences because these tasks were not initially and purposively connected to the incoming economic task.

When we consider further these conditions, we would also expect to find retention and/or alteration of existing technologies, particularly those forms most closely associated with plant collecting and gardening tasks. These changes should be reflected in the form of internal community pattern as well as the site's role in local and regional patterns of inter-site interaction.

Perhaps we can best view this conjectured situation from the perspective of a watershed effect whereby relatively small changes at the moment will culminate in much larger changes later on. The problem is detecting the "small change at the moment" and following it through to the "larger change." This type of situation is precisely what we are observing on a macro-level in the archaeological record when we record the diachronic change from plant collecting to plant manipulation and breeding. The resulting socio-cultural changes are obviously important. The difficulty lies in archaeological detection of that "small change," particularly in this case as it relates to man/plant relationships during the Archaic to Woodland cultural time periods. Stratified archaeological sites, such as Hurricane Branch with continuity as well as change in certain technological aspects and activity structure, can provide useful opportunities to procure data relevant to these problems. Only with stratified sites can we begin to analyze how specialized activities will eventually replace existing tasks and how the resulting tasks will grow or expand into other forms.

As a cautionary note here, it should be stressed that we are not specifically referring to the continuous use of the site (or any other site for which this level and type of inquiry may be applied) by one population throughout time. What we are addressing, on the other hand, is a continuous man-land use (society-site area) relationship whereby presumably different populations representative of a developing regional tradition (such as the Woodland Period in the southeastern United States) intermittently occupied the site. In other words, the basic assumption here is not that one specific society developed a changing man-land use relationship (as defined above) at the site, for that would be difficult, if not impossible, to prove, but rather that throughout the time period concerned various activities were performed at the site by different populations with different and probably more advanced lifestyles reflective of broader socio-cultural developments occurring on both a local level and a regional level. Thus, the inferred socio-cultural changes observed at the site from the Archaic Period through the Woodland Period, albeit any chronological gaps in occupation, are interpreted to be manifestations of interrelated developments taking place between interrelated populations on at least a local level.

Archaeological Indicators

Each of the activity patterns discussed above are expected to produce categories of site tasks reflective of different economic activities performed at the site. These tasks are often not so easily separated in the archaeological record. For instance, similar types of tools might have been used to gather wild plants as well as to procure and process cultigens. Grinding implements could be used for processing both corn kernels and nuts, seeds and the like. Storage pits could also have been utilized for long-term maintenance of feral or domesticated plants.

Stratigraphically separate Archaic and Woodland components at the Hurricane Branch Site should be characterized by different, and perhaps overlapping, technological forms and functions. Examination of the types of lithic tools, features and flora and fauna remains and how they are associated across the site for each cultural component should provide clues for evaluating diachronic socio-economic continuity and change as well as specific patterns of artifact variability as it may relate to specific internal activity structure.

In order to specifically address these archaeological inquiries, we should be prepared to investigate the archaeological interplay among the following:

1) Group size and its relation to the spatial extent of the occupation through time.

2) Seasonal occupation that may or may not have been repeated, the duration of which may be congruent with the length of the feral or domesticate "harvesting seasons."

3) The site activity structure and how different activities were carried out during different cultural periods.

4) Maintenance of relevant activities.

5) Inter-site affinities.

6) Inter-site activity patterns (i.e., comparing Hurricane Branch activity patterns to patterns at 1) smaller, presumably dispersed sites and/or 2) sites during other cultural periods).

7) Ecological factors that may have promoted or have contributed to the aggregated activities at the site.

8) Frequency of specific artifact subassemblages in connection with various types of features.

9) Analysis of techno-functional irregularities and regularities relevant to technological implements and their attributes and spatial relationships.

10) Articulation of economic regularities and irregularities through time and space.

This approach must also take into consideration an examination of past low and high resource zones of productivity in the immediate site environs. Such ecological concepts as "species packing" (MacArthur 1972) and species diversity during different seasons of the year must be considered also.

It is unlikely, however, that we can address all of these factors with confidence, particularly given the lack of good data on regional settlement/subsistence systems and past ecosystems. Nevertheless, if we can begin to identify the specific factors that promoted a blending effect of related, and transitional economic tasks, and the time-lapsed consequences of this blending, we can possibly then begin to focus on the specific socio-cultural position of different site populations, such as Site 40JK27, along the continuum of economic change.

In conclusion, this research design would be optimally operationalized on a sample of sites from the Middle Cumberland River drainage, although almost any spatially extensive sample of sites with stratified components representative of the Archaic to Woodland cultural time periods would provide adequate information for discerning preliminary trends pertinent to the questions raised above.

However, some compromise in scientific rigor occurred because a less than ideal sample of the site was excavated and there is little known of the regional prehistory. The compromise required in the sampling design for an area such as the Middle Cumberland River drainage, where little previous work has been performed, in some ways will render results even more tentative than they might otherwise be.

Nevertheless, if we view the overall prehistoric population of the Hurricane Branch Site as a set of systemically organized man-land use adaptive structures (irrespective of whether one group continuously occupied the site from generation to generation during the time span under consideration, and thus had opportunity to develop from one economic task level to another), the investigation of techno-economic and environmental problems cannot help but illuminate the operations of others. That is, the analysis of the established archaeological concerns of artifact function, chronology, cultural affiliation and the like are automatically inclusive of this research design.

The explication of techno-economic and techno-environmental considerations can be at least partially accomplished by the strategies outlined herein which may be accomplished by empirically identifying behaviors postulated to be associated in their operation. The anthropological objective of this project as approached with an intra-community activity structure design can be most appropriately addressed in terms of the above outlined scheme arranged according to the expected behavioral complexity archaeologically represented at Site 40JK27 and the data recovered from the site by previous researchers.

The following section specifies the survey and excavation strategies employed in the field to focus on the research problems discussed above.

Survey and Excavation Strategies

by
David Pollack
Jack Rossen

Controlled Surface Collection

Because the Hurricane Branch Site had not recently been cultivated, it was necessary to clear existing vegetation before the site could be plowed and a grid established. Due to a combination of dense honeysuckle, fence lines and a pine tree orchard, only 80% of the site was plowed and surface collected. Repeated rains, shortly after the site had been plowed and throughout initial fieldwork, resulted in relatively consistent field conditions during the controlled surface collection.

A 4 m X 4 m grid which covered an area approximately 300 m X 80 m was established at the site with the main baseline oriented north-south (Figure II-1). The 4 m X 4 m grid was appropriate for documenting spatial variation of surface collected artifactual material within the site and was compatible with the planned 2 m X 2 m excavation units. The initial collection square was selected at random in the north end of the site and was used to initiate a checkerboard surface collection pattern to the south. In total, 508 squares (approximately 50% of the gridded area) were collected. This surface collection technique provided even coverage of the site and the sample was of sufficient

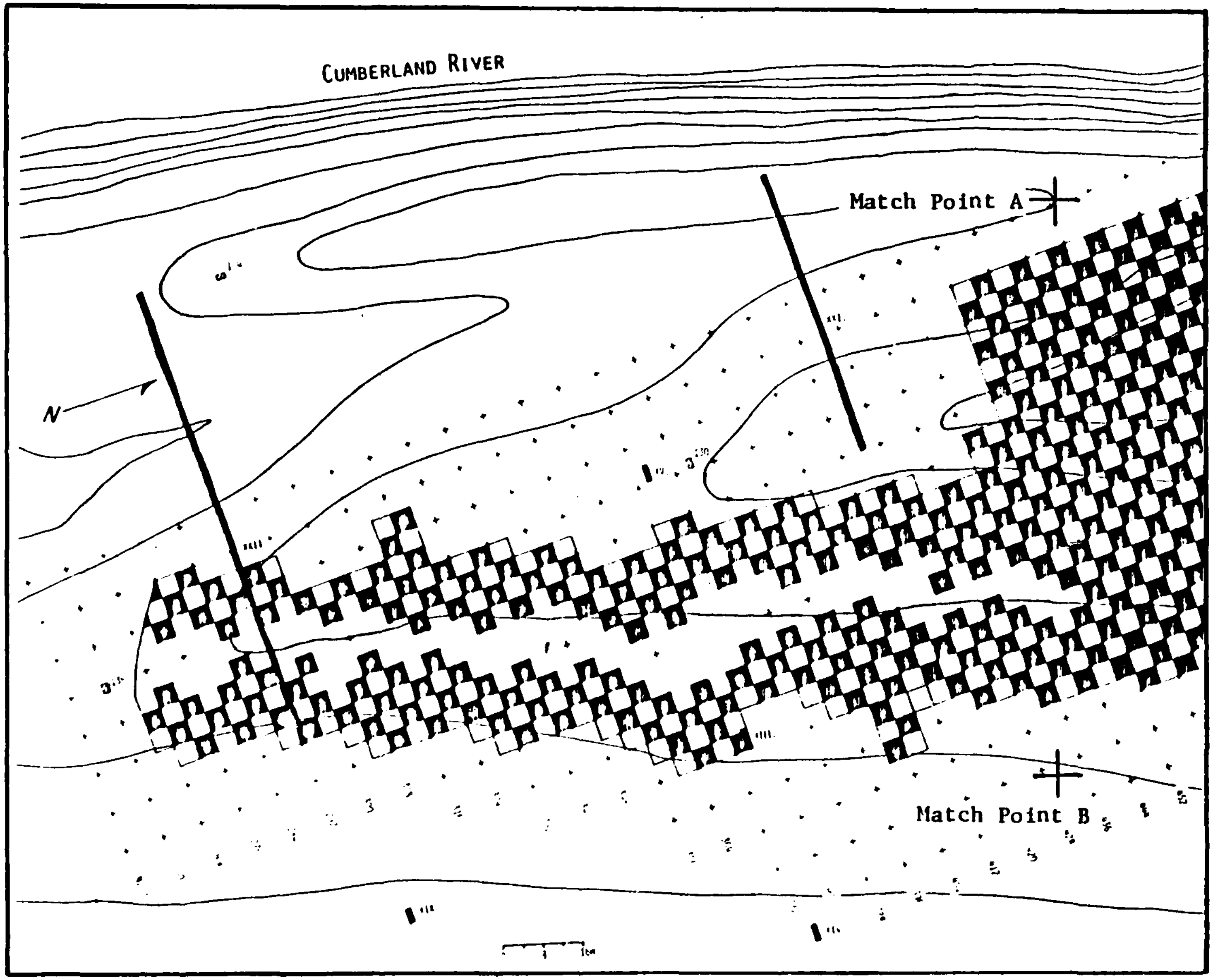

Figure II-1. Surface grid and collection squares.

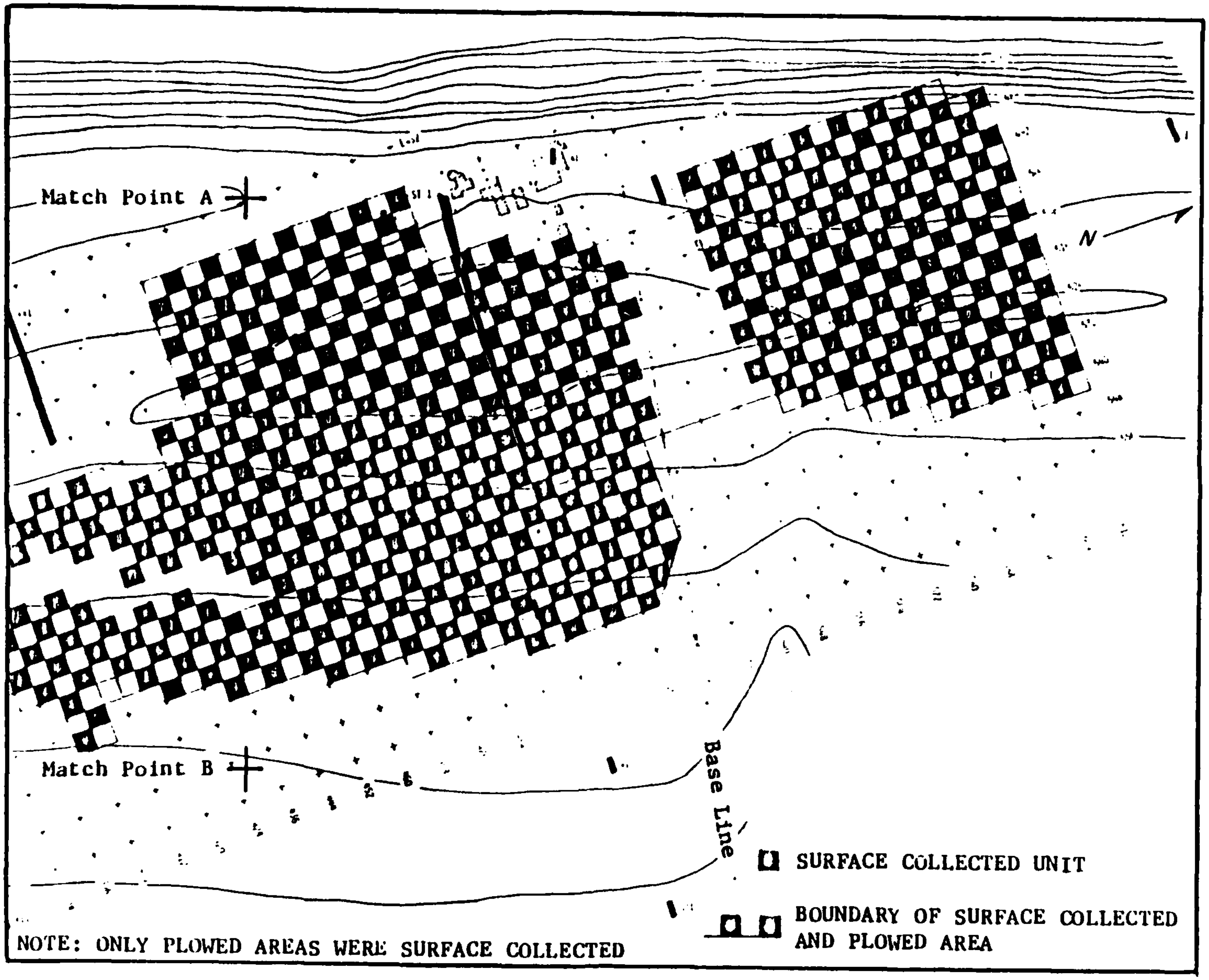

Figure II-1. Continued.

size to producing surface artifact density maps (see Jermain and Dunnell 1979). It should be noted that unplowed areas were not surface collected. Subsurface testing of these areas later revealed a low density of cultural materials in the subplowzone deposits within these areas.

During the course of the controlled surface collection, all materials in the sampled squares were bagged and provenienced by the northeast grid co-ordinate. Diagnostic artifacts from units not included in the 50% sample were also recovered and recorded in the same fashion.

A field lab was established to process materials from the surface collection. Provenience records were kept for all bags, and cultural materials were sorted into various classes such as tools, flakes, pottery, ground stone, and fire-cracked rock. This data was used to generate preliminary surface distribution maps of different artifactual classes across the site and to assist in the implementation of an excavation strategy for Site 40JK27.

Four spatially distinct areas of surface debris across the site were indicated from the distributional maps. These concentrations not only dictated the course of the excavation strategy but were also used hueristically to divide the site into four areas for the purpose of describing localities within the site. Area 1 (North 541 to North 640) was the northernmost surface concentration of artifacts. Area 2 (North 441 to North 540, East 450 to East 500) was situated on the main ridge and along the river bank on the west side of the site. Area 3 (North 441 to North 540, East 501 to East 560) represents a large surface concentration east of Area 2. Area 4 (North 250 to 440) included the entire southern half of the site, where artifact density was relatively low and backhoe testing indicated the absence of substantial subsurface intact deposits. When surface density maps were computed in the laboratory, a fifth area was subsequently defined. This analysis and the distributional maps defining these areas are presented in detail in Chapter VII.

In addition, 21 backhoe trenches were excavated to determine whether deeply buried cultural deposits were present, and to document the geologic history of the site (Figure II-2). Each trench was numbered, south walls were profiled, and recovered materials were provenienced accordingly (see Chapter V).

Numerous shovel probes and soil auger tests were systematically placed across the site to detect any extensive subsurface activity areas not recorded by backhoe trenches, test pits and block excavations.

FIGURE II-2

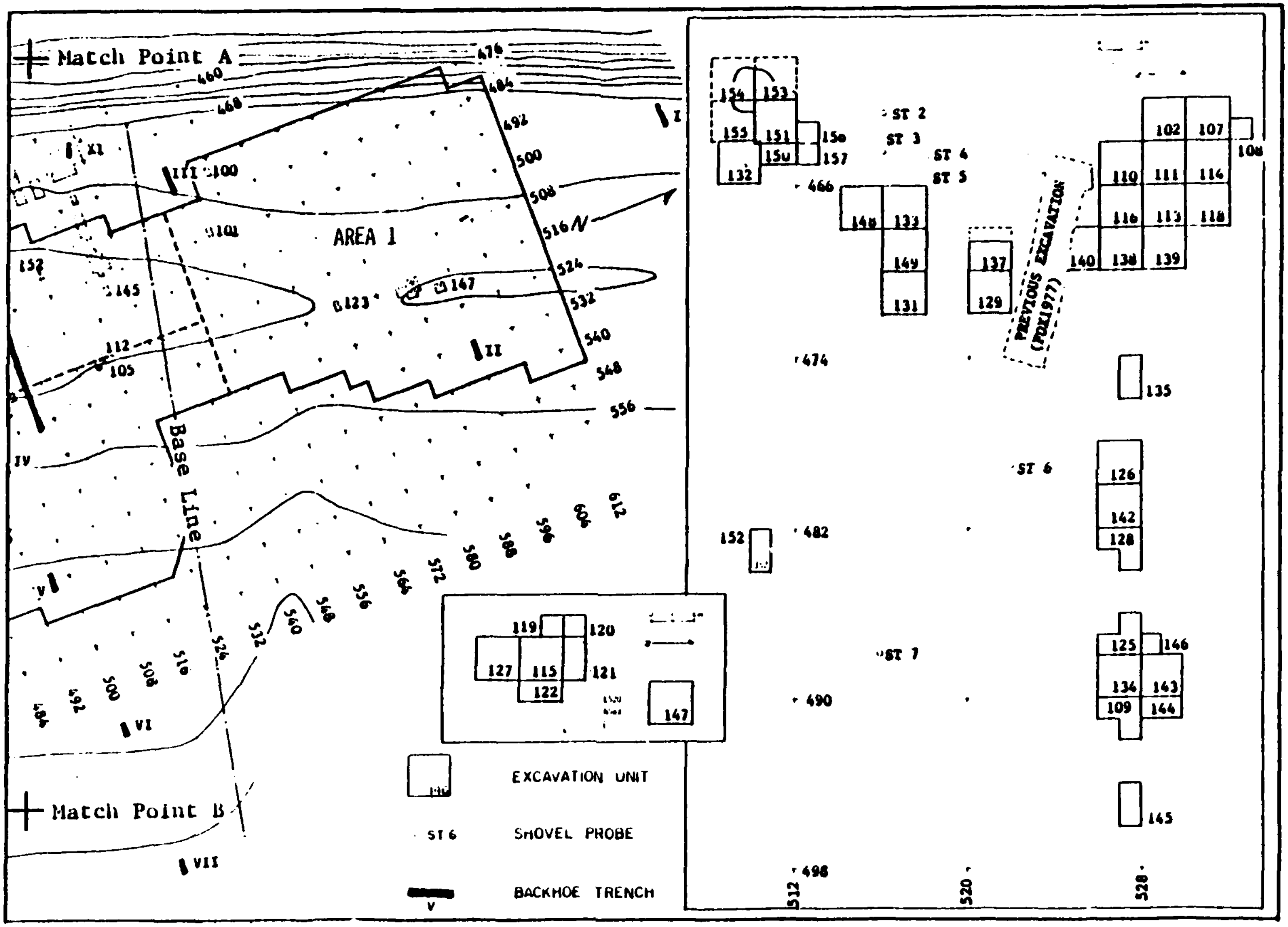

Figure II-2. Area map of site showing excavation units, shovel probes, and backhoe trenches.

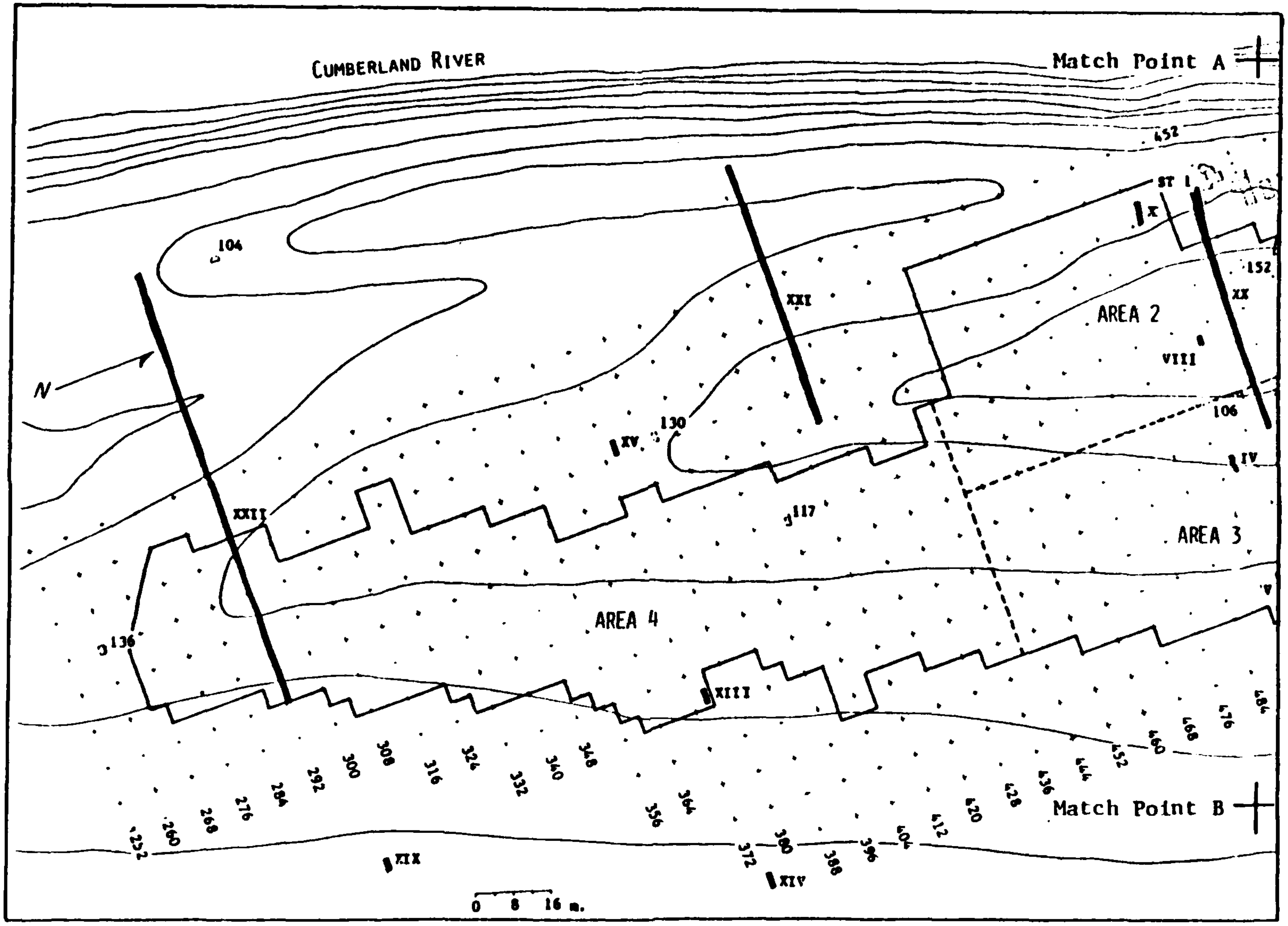

Figure II-2. Continued.

Subsurface Testing and Excavation Strategy

The initial testing strategy consisted of scattered hand-excavated 1 m X 2 m units with an option for expansion into larger excavation blocks where features or substantial midden deposits were encountered. Two 1 m x 2 m test units were planned in Areas 1 and 3 (Figure II-2) and four were planned in the larger Area 4. In the western section of Area 2, a 4 m x 4 m block was immediately planned because of features exposed by backhoe trenching along the river bank.

As the field season progressed, the excavation efforts were eventually concentrated in Area 2, based on the presence of intact midden and subsurface features. As a result, 114 square meters were excavated in Area 2, compared with 20 square meters in Area 1, 7 square meters in Area 3, and 6 square meters in Area 4.

Excavation units consisted of four 1 m x 1 m quadrants. Units were numbered sequentially beginning with 100. Quadrants were designated by their north and east grid coordinates. For several reasons which include subsurface disturbance and the previously discussed excavation strategy, it was not always feasible or desirable to excavate all quadrants of a unit.

Prior to the excavation of each unit, elevations were taken from a permanent transit station. Thereafter, all elevations were taken from this station and recorded upon the completion of each excavated level.

Once defined, the 30-40 cm plowzone was removed as a stratigraphic unit. Initially, all plowzone from excavated units was waterscreened. However, dense vegetation and roots (i.e., honeysuckle) slowed the waterscreening to the point where it was no longer practical to screen all soil from the plowzone. Therefore, a 50% checkerboard sampling strategy was adopted.

With the exception of Area 2, subplowzone cultural deposits were excavated in arbitrary 10 cm levels down to the sterile subsoil. In the block excavation of Area 2, an effort was made to maintain the entire block at the same elevation. To accomplish this, it was necessary to adjust the thickness of Level 2, which ranged from 2 cm to 10 cm. All subsequent levels were excavated in 10 cm levels. This technique proved useful in identifying and recording the spatial association of subplowzone features.

In all excavations, stratigraphic zones were designated by Roman numerals; [These zones were designated soil bodies in the lab (see Chapter V for detailed explanation). Hence, soil bodies will be used throughout rest of report.] levels were designated by Arabic numbers. Materials recovered from all excavated levels were provenienced by zone, level, unit, and northeast grid coordinate of quadrant. Notes were taken at the completion of each unit level and recorded on standardized forms. Zonal information was later incorporated and coordinated with the geomorphological analysis of site stratigraphy.

During the early stages of investigation prior to installation of the waterscreens, three test units (100, 101, 104) were dry-screened through 1/2 inch mesh. All other units were waterscreened through 1/4 inch mesh. All waterscreened soil was first placed in wheelbarrows accompanied by a linoleum chip marked with the appropriate provenience. The first wheelbarrow load from each quadrant level also contained a labelled paper bag. Screened material was placed on drying racks before being bagged and inventoried. During the drying process, rough sorts were conducted to provide information concerning the nature and quantity of the recovered materials.

Shovel probes were excavated west of Area 2 near the riverbank to determine whether the west edge had slumped due to erosion. A number of shovel probes were placed in Area 2 to document the horizontal and vertical nature of the cultural deposits (Figure II-2). Shovel probes ranged from 20 to 30 cm in diameter and 60 to 70 cm in depth. They were profiled and designated by grid coordinates. Artifacts contained in shovel probes were bagged and provenienced.

Flotation samples were taken from subplowzone cultural levels in the western section of Area 2, which was thought to have the best potential for the recovery of organic materials. Sample blocks measuring 20 cm x 20 cm x 20 cm were bagged for future processing analysis. Charcoal samples were also collected whenever appropriate. In addition, soil/pollen samples were taken from 1 m intervals of hand excavation units in Areas 1, 2, and 3. Inventories were maintained for all specialized sample categories (i.e., floats, C14 and soil/pollen).

All excavated features were initially photographed and drawn in plan view. They were next divided on their long axis and one-half was removed by troweling. At this point, both color and black and white photographs were taken and profiles were drawn to illustrate the vertical shape and depth of each feature. The remaining half was then removed and photographs were taken of the completed feature. Elevations were recorded at the top and base of each excavated feature. Features were provenienced by a north and east co-ordinate located in the center of the feature and referred to as the feature's "centerpoint."

Three larger features (31, 40, 51) were excavated in 50 cm subunits in an attempt to document spatial patterning within features. All fill from features was inventoried and bagged separately for flotation at a later date. An individual form was completed for each excavated feature.

Two burials were encountered during excavation. These were exposed, mapped, photographed and removed. Detailed forms were completed for each.

Laboratory Procedures and Analysis

Standard archaeological laboratory procedures were used to process cultural materials collected in the field. These materials were washed, numbered, catalogued and sorted by artifact class, such as chipped stone, ground stone, ceramics, and fauna. Flotation samples were processed in a device similar to that described by Watson (1976) prior to drying and sorting of carbonized materials. Artfact classes were subsequently analyzed in detail by technicians charged with the tasks of 1) generating a refined classification of the recovered materials, 2) initiating a framework for further interpretive analyses, and 3) describing the general characteristics of each artifact class.

Each of the major categories of materials was analyzed separately within established descriptive typologies appropriate to each category. In general, non-stylistic attributes were used to classify the prehistoric cultural materials recovered from the site. Typologies developed by the Program for Cultural Resource Assessment were used to classify the chipped and ground stone artifacts. Stage of reduction, as defined by Collins (1975), was the organizing principle used in the chipped stone typology. Techniques of manufacture or use such as pecking, grinding and polishing were characteristics used to classify the ground stone artifacts. Temper and surface treatment were the primary attributes used to define ceramic types. Botanical and faunal remains were classified to genus and species whenever possible. The results of the analyses of cultural materials recovered from the Hurricane Branch Site are presented in Chapter VI.

No attempt was made by the analysts to determine the spatial distribution of the artifacts. The spatial distribution of the artifacts recovered from the site, the characteristics of artifactual subassemblages and an interpretation of the observed patterning of materials at Site 40JK27 are presented in Chapter VII.

Data Manipulation

Information collected by individual analysts as well as artifact provenience information was coded for computer manipulation. Artifact classes as well as subdivisions within each class were assigned a six digit number. Thus, each artifact type had its own unique number (i.e., 210100 unclassified flake, 801010 Limestone tempered plain, 000220 Vitis sp., etc.)

The four objectives of the data manipulation were: 1) to characterize each artifact assemblage; 2) to characterize the artifact assemblage from each of the four sub-areas defined from the controlled surface collection and testing; 3) to characterize the artifact and assemblage from each of the excavated cultural components; 4) to examine the spatial distribution of artifact classes across the site and within each cultural component. Programs developed by the Program for Cultural Resource Assessment were used to sort the data by artifact category and to generate numerical frequencies of each artifact type.

In addition to the programs developed by the Program for Cultural Resource Assessment, SPSS FREQUENCIES, CROSSTABS, and BREAKDOWN procedures (Nie et al. 1975) were employed to aid in the characterization of the surface and subsurface artifact assemblages. These procedures provide descriptive statistics, such as frequencies, percentages and means which are invaluable when comparing artifact assemblages from different areal sections and cultural components of a site. As previously discussed, four segregated areas were defined from the surface collection and testing of Site 40JK27. The distribution of artifacts from these areas are presented in Chapter VII.

Nine components referred to as "cultural series" were identified from the excavations in Areas 1, 2 and 3. These cultural series are defined in Chapter VII. A summary of the frequency of the materials recovered from each cultural series is also presented in Chapter VII.

The SPSS SCATTERGRAM procedure (Nie et al. 1975), SASPLOT, (Helwis and Council 1979), CMAP (Couen and Lovingoal Jr.), and SYMAP (Laboratory for Computer Graphics and Spatial Analysis) mapping programs were used to examine the spatial distribution of artifacts at the site. SPSS SCATTERGRAM and SASPLOT were used to generate distributional maps of various artifact types. For each SCATTERGRAM and SASPLOT east was designated by the x axis and north by the y axis. These programs treat the artifact as a point in space and can thus be used to plot artifact distributions. Problems arise however when plotting large numbers of observations. The SPSS SCATTERGRAM procedure will not plot more than nine observations within an individual plotting cell and SASPLOT will not plot more than 26 observations in one cell. Thus, if a large number of artifacts are recovered from a specific location, these procedures may not adequately reflect the overall density of artifacts within a given area. Therefore, the appropriate plotting program had to be chosen for each data set based on the frequency of observations and the potential for numerous observations per cell. In most cases, no single cell exceeded the limits of the plotting packages chosen for use. Where this situation occurred, a notation to this effect is included and interpretations are adjusted accordingly.

SYMAP and CMAP mapping programs were used to examine the distribution of large numbers of artifacts, such as all the chipped stone materials recovered from the surface. SYMAP was used to examine surface distributions and CMAP was employed when subsurface data was examined. The SYMAPs used in the analysis were isopleth maps which generated contours reflecting the density of artifacts recovered from the surface collection. Since the surface collection was a 50% checkerboard sample with the initial collection squares selected at random, the investigators felt comfortable predicting the density of cultural materials in uncollected areas.

To examine spatial variability between 1 m x 1 m subunits, the CMAP Chloropleth Mapping Program was used to generate artifact density maps within excavated areas. Unlike isopleth SYMAPS, chloropleth maps do not produce contours illustrating artifact density. Rather, shading is restricted to a defined subarea of the map, in this case the 1 m x 1 m subunit.

CHAPTER III

ARCHAEOLOGICAL BACKGROUND

by
Thomas W. Gatus

Introduction

The four major prehistoric cultural traditions recognized in the Eastern United States as well as along the Cumberland River drainage in Tennessee and Kentucky will be discussed in this chapter. These traditions are the Paleo-Indian, Archaic, Woodland and Mississippian. Each tradition and various subdivisions are summarized in terms of the Lower, Middle and Upper Cumberland River drainage. In light of the data recovered at Hurricane Branch, particular emphasis will be placed on regional Woodland developments.

Early Man (?-13,000 B.P.)

The initial peopling of the New World has been, and continues to be, an issue of wide debate. Evidence appears to be mounting, however, for the earliest evidence of man in the New World prior to about 25,000 years ago. Most of this evidence is taken from sites which do not contain distinctively diagnostic tool types, at least in the traditional sense of projectile points, certain ground stone tools, etc. For example, Bonnichsen (1978) dated a bone flesher and other "altered" bone fragments at approximately 29,100, 27,000 and 25,750 years ago at Old Crow Flats in the Yukon, Alaska. In Central Mexico Mirambell (1978) reported a hearth with associated stone implements dated at 24,000 years ago and a second hearth which yielded a date of about 21,700 years ago. Also a quartz scraper was recovered in a strata dated at about 22,000 B.P. At Santa Rosa Island off the California coast, Orr (1968) found Pleistocene faunal remains associated with stone implements in a hearth. These materials varied in age from about 37,000 to 11,800 years ago. Assuming that these finds are credible and that the radiocarbon dates are fairly accurate, other questions begin to arise concerning issues of general anthropological interest. Most important perhaps is the issue of subsistence strategies and social organization. Although the tool kits have not been well-defined, it appears that the use of more or less generalized stone tools indicates involvement in a nonspecialized mixed economy dominated by plant, and possibly shellfish, gathering and hunting.

By the time stone projectiles with distinct stylized morphologies arrive on the archaeological horizon, there is good evidence for separate hunting practices. Bryan (1978) argues, for example, that El Jobo projectiles from the Taima Taima kill site in Venezuela (circa 13,000 B.C.) predate the Clovis projectile points of North America by 1500 years, and, based on their distinct morphologies, that the two technologies are totally unrelated; Clovis being fluted and hafted onto a split stick or beveled foreshaft and El Jobo being a thick "bullet-shaped" projectile hafted to a socketed shaft. Based on the rise of other contemporaneous projectile point styles both in South and North America, Bryan (1978) has further concluded that different people were experimenting with flaking techniques and that they developed their styles independantly.

The environment in which these earliest Americans lived had a considerable effect on their survival. Evidence from palynological studies supports the presence of a fairly temperate climate in the Southeastern United States during the time in question. Whitehead (1973:630) states that, "It would thus appear that between 23,000 and 36,000 B.P. the vegetation of much of the southeast was decidely temperate in character, although some boreal elements were present." If such a climate produced resources similar to those present today, then the earliest of Americans would have had a rich resource base to exploit and master in order to survive.

Paleo-Indian Tradition (13,000-10,000 B.P.)

From the period discussed above to the known time of Paleo-Indian presence (circa 15,000 B.P.) in the Eastern United States, dramatic environmental shifts had taken place. A new series of glacial advances produced glacial drift and outwash deposits as far south as northern and western Kentucky (McFarlan 1961:128-129). Concomitant with the climatic shift was a change in the nature of the floral community which exhibited predominantly boreal characteristics. According to Whitehead (1973:626), palynological studies conducted in North Carolina reveal a shift from boreal to deciduous forests with northern hardwood components at approximately 11,000 years B.P. Undoubtedly, such substantial changes affected faunal and human populations as well.

For the present study area, there is evidence of man's presence around 15,000 B.P. based on the occurrence of "fossil directures" such as the fluted projectile point which has been dated in other sections of the Eastern Woodlands (Mason 1962:228) at around 11,000 - 10,000 B.P. in northwestern Maine (Gravily and Rutledge 1981), 13,000 - 15,000 B.P. in western Pennsylvania at Meadowcroft Rockshelter (Adovasio et al. 1975), 10,650 B.P. at the Debert Site in Nova Scotia (McDonald 1968:53), and 12,580 B.P. at Dutchess Quarry in New York (Funk et al. 1969:20).

Fluted projectiles and a variety of unifacial and bifacially chipped scraping tools are usually interpreted as an indication of a major emphasis upon hunting though collection of wild berries, tubers, seeds, etc., probably played an important role in the subsistence patterns which probably began in pre-Paleo times. In the western United States numerous sites have been found associating Paleo-Indians and extinct fauna such as camel and mammoth. As yet, such association has not been found east of the Mississippi River.

Beginning on the Lower Cumberland River, the adjoining Tradewater River and the Land Between the Lakes area, several Paleo-Indian sites have been documented. Webb's (1951) report on Parrish Village, located in Hopkins County, Kentucky, drew attention to this area as one of Paleo-Indian activity, but little was actually learned from the data. Rolingson and Schwartz (1966:43) in a re-analysis of Parrish reported that there were only seven fluted projectiles in the site assemblage and that they were "not culturally associated with any of the [other] chipped stone tool assemblage." Other sites discussed by Rolingson and Schwartz (1966) included:

1) the Henderson Site (now under Lake Barkley) -- located near the confluence of Eddy Creek and the Cumberland River.

During initial survey and testing, Schwartz and Sloan (1958) recovered one fluted point from the plowzone. Subsequent work conducted in 1961 recovered several Cumberland fluted point fragments and one Dalton point. Rolingson and Schwartz found the closest comparison to this assemblage in the Nucholls Site, located in Stewart County, Tennessee.

2) the Roach Site -- located on the Tennessee River near the mouth of Ewes Branch in Trigg County, Kentucky.

This site was considered to be Late Paleo-Indian due to the presence of Quad and Dalton points. The Roach Site was also found to bear greatest similarity to Nucholls. Perhaps the most significant data to come from the Palec-Indian artifacts was that they were clustered. The Quads, for example, clustered in the west central area of the site while the fluted points were restricted to an area north of the Quads. This pattern was interpreted to be the result of differential cultural activities across the site.

3) the Morris Site -- located on a small knoll overlooking the confluence of Clear and Sugar creeks.

Two Cumberland Fluted, three Quads and 22 Dalton points were recovered from this site.

Evidently, Paleo-Indian activity was fairly widespread in the Lower Cumberland uplands. Most of the substantial surveys have reported Paleo-Indian materials. For instance, Hoffman (1968) in a survey of the I-24 right-of-way recovered a Quad point on Eddy Creek. Coe and Fischer (1959) recovered two fluted projectile point fragments at the Ralls Site on a knoll overlooking the Cumberland River floodplain near Dover, Tennessee. A little further upstream, Morse (1963) recovered a Plainview point on the Allen Site which overlooks the Cumberland River near Cumberland City. Other than a transitional point, Morse (1963:198) reports that no Paleo-Indian type points were recovered in two seasons of work on the floodplain. In an attempt to explain this phenomenon, Morse suggests that the Tennessee and Cumberland rivers were pluvial at the time and were, therefore, unsuitable for hunting and habitation. Dragoo (1973) discovered a sizeable Paleo-Indian occupation demonstrating Clovis technology at the Wells Creek Site. In addition to the more common unifacial and bifacial tools, Dragoo found a heavy core tool industry which he compares favorably with certain Mousterian traits. The site (now destroyed) remains undated, and will probably remain enigmatic until comparable assemblages from the area are studied. Elsewhere on the Lower Cumberland, Solecki (1954) documented a fluted point on a hill slope while conducting a survey of the Cheatham and Old Hickory reservoirs on the Harpeth River near its confluence with the Cumberland. Also along the Lower Cumberland, Jolley (1978) reported isolated finds of two Transitional Paleo-Indian projectiles. He suggests that earlier Paleo-Indian materials may be buried or are perhaps located in the uplands. The presence of Paleo-Indian sites in the uplands of the Lower Cumberland has been documented most recently in Christian County, Kentucky, where 29 sites with Paleo-Indian components were recorded. Both "open" and cave or shelter sites were surveyed. The majority of these sites were found along the Little River and the West Fork of the Red River (Sanders and Maynard 1979:259).

Numerous Paleo-Indian sites have been identified in the Middle Cumberland area. Pendarves (1953) reported several Cumberland, Quad and Clovis points from the Cumberland River valley and hills overlooking the river in Sumner County. In Overton County, which borders Jackson County on the east, Lewis (1958) reported two Cumberland points. Near the confluence of Salt Lick Creek and the Cumberland River in southwest Jackson County, Ball (1979) reported three sites with Paleo-Indian components; however, only one (40JK38) produced distinctive projectiles such as Quad, Dalton, and Beaver Lake. Lewis (1961) also discusses two fluted points from Smith County; one found along Defeated Creek and the other found on a knoll 200 yards from the Cumberland River 3 miles below Carthage. Four other Paleo-Indian and transitional Paleo-Indian sites have been documented in Smith County by Weaver (1978) during a transmission line survey from the Hartsville Nuclear Plants in Smith County, Tennessee to Tullahoma, Franklin County, Tennessee. According to Weaver, all four of the sites were located on terraces.

The real potential for Paleo-Indian occupation in the area in and around Jackson County was demonstrated by Morse et al. (1964) in a study of the University of Tennessee's Paleo-Indian projectile point collection. They noted a very high frequency in Smith County--the highest recorded in the state. "The points occur for the most part on knolls overlooking relatively broad valleys caused by stream intersection along the Cumberland and Caney Fork rivers (Morse et al. 1964:16). In terms of general distribution, they noted that the presence of fluted points at relatively high elevations hints at a higher water level. "We note here, however, that the points tend to occur on high knolls overlooking relatively broad valleys and bottom lands near the mouth of tributaries, such as Defeated Creek . . . Also, the lowlands have a considerable amount of recent deposit present. Probably, specific drainage patterns have changed somewhat since the Pleistocene, thus influencing our distributional data to a certain extent" (Morse et al. 1964:33).

Also concerning the distribution of Paleo-Indian sites, Lewis (1954) observed that there was a high percentage of Paleo-Indian sites in the area of relic prairie in central Tennessee. Similar physiographic settings in Kentucky (i.e., the Mississippian Plateau) have produced comparable data. Boisvert and Gatus (1977) surveyed one transitional Paleo-Indian site and documented several additional projectile points from private collections in Adair County, Kentucky, a small portion of which is drained by the Cumberland. In Pulaski County, Kentucky, Allen and Griffin (1978) recovered a Quad and a Lanceolate (unfluted) projectile point. Based on a survey by Gatus and Sanders (n.d.) and records in the Office of State Archaeology, there appear to be at least 14 Paleo-Indian sites documented in Pulaski County, Kentucky. Gatus and Maynard (1978) suggest that there is a correlation between Paleo-Indian sites and sinkholes for most of the Mississippian Plateau in Kentucky and Tennessee and that that relation may hinge on special micro-environmental resources of the sinkholes, such as water, available chert and floral and faunal communities. Also, concerning the environmental setting of Paleo-Indian sites in the Middle Cumberland, Jolley (1979:35) stated that "although sites of this time period do occur on floodplains and alluvial terraces of streams that run along the edge of the Cumberland Plateau, there is a tendency for the sites to cluster in coves and uplands that are situated in sheltered stream valleys that dissect the Cumberland Plateau."

Along the Upper Cumberland, reports of Paleo-Indian sites diminish rapidly. Whether this reflects a general lack of archaeological fieldwork in the area, or an avoidance of the area by Paleo-Indians is yet to be ascertained. Wilson and Finch (1980) reported one rockshelter Paleo-Indian site in the Big South Fork area. Turnbow and Allen (1977) and DeLorenze and Weinland (1980) each report the occurrence of an open Paleo-Indian site in Knox County, Kentucky.

Discussion of Paleo-Indian

In summary, there is substantial evidence for Paleo-Indian activity along the entire Cumberland River course and in a wide variety of physiograpic settings. One observation made concerning the distribution of Paleo-Indians in the river valley proper is that floodplain sites do not appear to be represented in surface collections except in valley floodplains and lower hillslopes. This neither supports nor conflicts with Morse's observation that the area was "pluvial" and thus not obviously suitable for Paleo-Indian occupation. There is some evidence, however, to suggest that the Lower Tennessee/Lower Cumberland and a portion of the Ohio River were lacustrine around 21,080 +/- 400 years B.P. (Marsters et al. 1969:210). The longevity of the environment in these areas, however, is not documented; therefore, its impact on the local Paleo-Indian occupation is unknown.

Based on the recovery of certain tools, the small size and/or low densities of artifacts, most of these sites appear to have functioned as hunting camps. The nature of specific Paleo-Indian cultural activities in this drainage is unknown since virtually no data exits on settlement patterning, intra-site patterning, subsistence, social and political organization and ceremonial life.

Archaic Tradition (10,000-3,500 B.P.)

The Archaic, which followed Paleo-Indian in the Eastern United States, signaled a change in the lifestyle of prehistoric populations. Subsistence strategies adopted during this time probably reflect adaptation to an altered environment caused by the retreat of the large glaciers. Boreal forest declined, tundra was covered with deciduous forest, and floral communities became diversified and regionalized. Some animals became extinct while others, such as caribou and musk ox, followed the ice north.

During this time, chipped stone tools became more diverse in form and variety and there is greater evidence for a more diversified subsistence economy. While it may only be a matter of better preservation, a heavier reliance on nuts (Willey 1966:60) and plant foods in general may be seen. By the Middle Archaic (7,000-4,000 B.P.), there is evidence of domesticates at the Koster Site in Illinois (Brown 1977:168). At the end of the Archaic, people in several areas in the Eastern Woodlands were living in permanent or semi-permanent villages and, in the lower Mississippi River Valley, began erecting earthworks and mounds. Such material manifestation of the sedentary lifeway suggests the beginnings of a formalization of religious beliefs or perhaps of the socio-economic organization. These developments therefore provided a springboard for later cultural amplification during the Woodland -- particularly the Middle Woodland.

Early Archaic

Investigations into the Early Archaic in this region have been most productive on the Little Tennessee (Chapman 1977), Ohio (Collins et al. 1979) and Kanawha (Broyles 1971) rivers where large scale mitigation projects initiated deep testing of alluvial bottoms. Similar deep testing has not been conducted on the Cumberland River with the exception of a bulldozer cut through a levee at the Hartsville Nuclear Plant (Boisvert 1982:personal communication). However, no significant intact deposits were encountered there. Since there have been no similar projects on the Cumberland River, Early Archaic data are derived primarily from surface collections, though some small scale excavations have been initiated.

In the Lower Cumberland Valley, Early Archaic data is limited to survey projects and a few excavations. The Allen Site (Morse 1963) located on a high knoll overlooking the river at Cumberland City, contained Kirk Serrated points. Morse suggested that these points [which comprised 80% of all projectiles (n=115)] functioned as knives. Other materials recovered included axes, hammerstones, a variety of gravers, spokeshaves, knives, abraders, splinter awls, deer ulna tools and cut antler. Two burials were also encountered. Morse infers that gathering may have been as important as hunting. While no function was assigned to the site, this writer believes that it was a base camp. Morse concluded that Early and Middle Archaic sites were often located on old stream terraces. Within the Barkley Basin Autry and Hindshaw (1978) recorded one Early Archaic site (40SW83) on a low spur on the second terrace above the Cumberland River. A survey conducted by Jolley (1978) located 18 Early Archaic sites in an area just west of Nashville on the Cumberland River. Projectile points such as Kirk Corner Notched, Kirk Stemmed, Harpeth River, Plevna and Lost Lake were recovered. Another survey, conducted by Weaver (1978), revealed six Early Archaic sites -- five on terraces and one in the uplands in Smith and Wilson counties, Tennessee. The cultural/temporal affiliations were defined predominantly on the presence of a cluster of Kirk points and a single Big Sandy projectile point.

Ball (1979) reports at least three sites with Early Archaic components in southwestern Jackson County, Tennessee. All are on the floodplain of Salt Lick Creek near its confluence with the Cumberland. Projectiles related to this period include Big Slough, PP/K#12 (Type Undefined)*, PP/K#11 (type undefined)*, PP/K#12 (Type Undefined)*, PP/K#13 (Type Undefined)*, PP/14#14 (Type Undefined)*, and PP/K#15 (Type Undefined)*.

On the Caney Fork River Jolley (1979) found the Early Archaic represented in all major environmental zones but with a denser representation around caves and in the uplands. Jolley offered a settlement pattern for the area similar to the Little Tennessee area where centralized base camps were located on alluvial terraces (Chapman 1975:273).

Autry and Jolley (1980) recorded a single upland Early Archaic site (40WM39) in Williamson County, Tennessee, along the Hartsville to Maury transmission line. The temporal/cultural period was based on the presence of a Kirk projectile point.

Further upstream, in Adair County, Kentucky, which is partially in the Cumberland drainage, Boisvert and Gatus (1977) found a variety of Early Archaic projectile points during a survey. MacCorkle, Kirk, Greenbriar, Crawford Creek and LeCroy points were identified.

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* This author.

In the Rockcastle River drainage of the Upper Cumberland, Earth Systems (1979) documented 82 sites. Twenty-one of these had no cultural components; six were Early Archaic. One was located in the bottoms and five in rockshelters. Their observation that there is a pattern of Archaic sites located in the bottom land and Woodland sites located in rockshelters is not borne out by their data since five of six Early Archaic sites are in rockshelters and only five out of nine Woodland sites are in rockshelters.

In the Big South Fork survey (Wilson and Finch 1980) Early through Late Archaic sites were noted primarily on upland ridges and escarpment base zones.

Discussion of Early Archaic

The Early Archaic Period of the Cumberland River Valley appears to be represented in virtually all physiographic settings, from floodplains and high river terraces to plateau and uplands. Such a pattern reflects a more diversified socio-economic adaptability on the part of the Archaic peoples to the early Holocene environments. The cultural material of this adaptation included a more diversified and specialized stone tool technology, which was used to exploit both faunal and floral food resources, and the beginnings of larger residential dwellings and sites, reflecting an increased population. Perhaps most significant is the appearance of cultigens and a sedentary lifeway, revealing a pattern of increased regionalization.

Middle Archaic

The Middle Archaic of the Cumberland Valley is as ill-defined as previous periods. The best regionally documented site is Eva, located in the Tennessee River Valley. Lewis and Lewis (1961) were able to define three phases here. The Eva Phase was considered early in the Middle Archaic (8,000-6,000 B.P.) and was characterized by a variety of notched and stemmed points, bifacial tools and ground stone. In the latter category, they listed anvil stone, a hammer and anvil, mullers, mortars and nutstones. Some of these tools were used in vegetal food processing, probably in ways similar to those described by Brown (1977:168) for the Middle Archaic Period at the Koster Site in Illinois.

The Three Mile Phase at Eva (6,000 - 4,000 B.P.) was considered late in the Middle Archaic. "Among the new traits were conoidal pestles, (as well as a minor number of the cylindrical type) several projectile point types, stemmed scrapers, large chert pounders, prismoidal and tubular antler (sic) weights, turtle shell rattles, and emphasis upon fishing and mussel collecting" (Lewis and Lewis 1961:173). In the Lower Cumberland, Nance (1976) investigated the Dead Beaver Site (15TR50) located on Crooked Creek, an eastward flowing stream on the west side of the river in Land Between the Lakes. This plowzone site was apparently occupied from 7,000 to 4,000 B.P. and probably represents a temporary camp utilized in late summer and early fall by small groups of hunters who primarily dressed and processed game. According to Nance, an abundance of resharpened flakes was recovered from the site, probably indicating that tool maintenance, rather than manufacturing, was a prime activity. Based on the lack of identifiable vegetal processing tools, Nance inferred a general lack of vegetal processing activities. Further east in the uplands, Hoffman (1968) noted many generalized Archaic (and some Woodland) sites, some of which are probably Middle Archaic, in the uplands and karsted plain north and east of the Cumberland River particularly in Lyon, Trigg and Caldwell counties, Kentucky.

Other definite Middle Archaic sites have been found on the Lower Cumberland floodplain by Coe and Fischer (1959) at the Ralls and Wallace sites in the Barkley Basin and also by Morse (1963) in the same reservoir. Investigations at the Coleson Site (40SW52) revealed a Middle to Late Archaic site on a ridge overlooking the confluence of two streams. Big Sandy, Eva, Cypress Creek and Motley points were recovered along with a drill, cores, hand choppers, hafted choppers, a variety of scrapers, gravers, spokeshaves, picks, a hammerstone, a pestle and a celt. Morse (1963) interpreted the site as a seasonal camp. In the same survey, four other sites (40SW33, 40SW47, 40SW59 and 40SW60) with mixed Archaic deposits, including Middle Archaic, were identified.

In Smith and Wilson counties, Tennessee, Weaver (1978) identified five Middle Archaic sites all of which were located on terraces. These sites were defined by the presence of Benton-like, Buzzard Roost, Morrow Mountain and Sykes/White Spring Cluster projectile points. Jolley's survey (1978) of an area west of Nashville documented five Middle Archaic sites which were interpreted as evidence of sparse occupation. West of Nashville in Wilson County, Autry and Jolley (1980) recorded a single upland Middle Archaic site, which was defined by the presence of White Springs/Sykes projectile points.

Prior to this project, the most intensively investigated site in Jackson County, Tennessee, was at the Penitentiary Branch Site (40JK25). It consisted of a shell midden approximately 1/3 acre in size located at the confluence of Penitentiary Branch and the Cumberland River. The shell midden varied between 7 and 70 cm thick and was apparently intact. Some midden areas were composed of at least 90% bivalves and gastropods. Other faunal, floral and lithic materials were also recovered. Big Sandy, Ledbetter, Greenbriar and a Motley-like projectile point were identified as well as a variety of scrapers, bifaces, "chisels, drills, knives, adzes, celts, hammerstones, notched cobble spall digging tools and grooved axes" (Cridlebaugh 1977:3). Based on recovered projectile points, it appears that the site was a center of cultural activity from the Early Archaic through the Early Woodland, but was most intensively occupied during the Middle and Late Archaic.

The faunal assemblage from Site 40JK25, counting both food debris and tools, included white-tailed deer, gray fox, black bear, turkey, box turtle, soft shell turtle, raccoon, elk, dog, wolf, porcupine, gray squirrel, woodchuck, beaver, catfish, raven, hawk and drumfish. According to Cridlebaugh (1977:4), a "Cursory analysis of paleobotanical remains indicates some exploitation of walnut, but heavy procurement of hickory nuts and acorns. Identified seeds include chenopodum (sic), portulaca, and Rubus sp. seed -- raspberry, blackberry or dewberry." Seventeen burials were excavated, but none contained culturally/temporally diagnostic grave goods.

At Salt Lick Creek, also in Jackson County, Ball (1979) identified two sites as Middle Archaic based on Big Sandy and Big Slough projectile point types.

On the Caney Fork River Jolley (1979) noted that most Middle Archaic data were recovered from intensely occupied sites on floodplains and alluvial terraces. Middle Archaic components were defined on the presence of White Spring/Sykes projectiles. Upstream in Adair County, Kentucky, at the divide between the Green and Cumberland rivers, Boisvert and Gatus (1977) reported the occurrence of Morrow Mountain and Eva points, but no functions were assigned to the sites. Middle Archaic data from the Upper Cumberland is equally as sketchy. DeLorenze (1979) identified a single, small, open Middle to Late Archaic site on the Cumberland floodplain in Bell County, Kentucky. The Big South Fork Survey (Wilson and Finch 1980) provided data which suggested that Middle to Late Archaic (and Early Woodland) sites were most commonly found in the "Riverine Terrace Zone."

Discussion of Middle Archaic

The Middle Archaic settlement and subsistence patterns for the Cumberland drainage, though sketchy, reveal a utilization of uplands, ridges, floodplains and terraces.

(Because this cultural manifestation is so poorly known, information on rockshelter occupation is missing.) As yet, there is not enough data to speculate on the specific patterns of socio-economic organization and of population dynamics for the period, although the current evidence suggests a lifeway similar to that of the Early Archaic Period. It can be surmised, however, that regional cultural patterns continued to develop and in some areas, the sedentary-food producing lifeway became a more dominant aspect of the socio-economic format.

Late Archaic

The Late Archaic was primarily an intensification of some Middle Archaic patterns with the addition of new items of material culture, new ideas and the important development of regional exchange networks. Exchange patterns established in the Late Archaic were reponsible for the influx of exotic items, such as copper and conch shell, being introduced to far distant consumers. Although it cannot be documented as easily, ideas also probably found new audiences. Goad (1980) presents an argument for the existence of two regional exchange networks in the Eastern U.S. during the Late Archaic. The northern network was responsible for the distribution of copper; the southern network was responsible for the distribution of conch. She hypothesizes that Indian Knoll people served as middle men to facilitate the flow of these exotics and that the best model to elucidate the exchange mechanism is linear reciprocal exchange, a system observed ethnographically where there is no centralized socio-political authority; rather a socio-political system based on achieved status with some authority vested in lineage leaders. In much of the Eastern United States there appears to be an increase in the number of sites and the amount of cultural debris dating to this period which is frequently interpreted to mean increased populations. There seems to be good evidence for semi-permanent villages at this time and by the end of the Late Archaic, Poverty Point, a complex center of ceremonialism, had arisen in the Lower Mississippi River Valley.

Several sites with Late Archaic components have been excavated in the lower Cumberland Valley both in the floodplain (Coe and Fischer 1959) and in the uplands (Mocas 1977; Schock et al. 1977). Other sites have been identified through survey (Jolley 1978; Hoffman 1968; Sanders and Maynard 1979; Schock and Alvey 1980). Few of these, however, go beyond chronological identification though site function may be inferred from some of the descriptions. Schock et al. (1977), for example, discussed excavations at Site 15CH3C7. This site appears to be an upland base camp emphasizing the processing of hides, meat and perhaps forest products.

Mocas (1977) found a Late Archaic component at the Lawrence Site but was unable to reconstruct much of the lifestyle due to the multicomponent nature of the site. He did, however, conclude that there was either an "intensive occupation or frequent visitation" (Mocas 1977:240).

Concerning work conducted in Lake Barkley, Morse (1963) surmized that there was "a general shift of settlement to the lowlands which besides reflecting a decrease of water level could also be interpreted as an economic shirt (sic) to dependence on fishing with only scattered camps established during parts of the year on the highlands." Although the projected decline in the water table may be subject to argument, Morse's observations concerning generally increased cultural activity on the river are borne out by other survey data, particularly by Jolley (1978), who found that the Late Archaic Ledbetter, Pickwick and Kays projectile points represented the largest portion of his collection. It is difficult to completely assess Morse's contention about the lower presence of Late Archaic sites in the uplands with the existing literature. However, recent salvage work conducted by Autry and Jolley (1980) has indicated more Late and Terminal Archaic sites in the uplands than Early and Middle Archaic sites in their survey area in the Middle Cumberland drainage. Conversely, salvage related survey conducted by Weaver (1978) revealed seven Late Archaic/Early Woodland terrace sites in Wilson, Smith and Cannon counties, Tennessee. Their cultural affiliation was based on the presence of Wade, Cotaco Creek, Adena and Adena-like projectile points. Perhaps the increased frequency of Late Archaic sites may only reflect the growing presence of Late Archaic peoples in a general way and not whether they were predominately occupied with riverine or upland resources.

Late Archaic sites in Jackson County, Tennessee, have been documented by Ball (1979). Five sites yielding projectiles indicative of this period were identified; however, no specifically Late Archaic features were excavated and no information on site functions was offered. Jolley's survey on the Caney Fork River (1979) revealed a trend towards a greater number of sites and greater intensity of occupation with the Late Archaic sites mostly found on floodplains and terraces. Similar conclusions were drawn by Boisvert and Gatus (1977) from sites in Adair County, Kentucky, where a dramatic increase in Rowlette, Kays, Wade, Little Bear Creek, Flint Creek, Cotaco Creek, Motley, Epps and Delhi points was observed. Other than data reported in Kentucky's state files, there is virtually nothing published on the Late Archaic in the Upper Cumberland Valley.

Discussion of Late Archaic

Subsistence data is generally lacking for the Late Archaic Period of the Cumberland River Valley; however, this lack of data may point out one significant difference between the Cumberland and neighboring rivers such as the Tennessee, Ohio, Green and Wabash. The latter four rivers seem to have supported an economy partly based on the exploitation of mussel shoals. Occupants of the Cumberland River either did not have access to that resource or did not choose to exploit it to the extent that their neighbors did -- particularly along the Green and Tennessee rivers.

There is little doubt that hunting continued to play a significant role during this period; however, there already appears to be evidence for use of cultigens in the Middle Archaic and by the Late Archaic at least two botanical regimes were being exploited in Western Kentucky. One includes the use of tropical cultigens, such as squash and gourd, along with the North American cultigens (sunflower, sumpweed and chenopodium) (Watson and Marquardt 1979) in the Mammoth Cave/Salts Cave area on the Green River. A second general pattern was observed further downstream on the Green River (4,040 B.P. - 4,250 B.P.) at Carlson Annis and Bowles where there was a reliance on wild species including hickory nuts, acorn, grape, blackberry, grasses, honey locust, knotweed and persimmons with cultigens playing a very small role. Exploitation of the Middle Tennessee River resources may have taken on a different facet since, at about the same time as the Green River shell mounds were occupied, Jenkins (1974:186) notes that in northern Alabama, from May to October, "a curious absence of plant processing implements might imply that plant resources of the river valley did not play a very important role in the food quest during that period of the year the shell mounds were being occupied."

Whether increased plant exploitation was practiced in the Cumberland Valley during the Late Archaic is problematical at present. Data that would address this problem satisfactorily has yet to be recovered. Overall there appears to be a trend towards greater Late Archaic presence in bottoms and on terraces, reflecting a shift towards a more riverine oriented economy which would include fishing and perhaps afford greater accessibility to and exploitation of certain cultigens and wild plants.

Woodland Tradition (3,500-1,000 B.P.)

Among the more recent literature in the east, perhaps the most concise statement about the development of the Woodland tradition was given by Dragoo. He stated that, "The once seemingly clear division between the two periods (Archaic and Woodland) does not exist since continuity can be demonstrated in all the previously discussed Archaic traditions. Traits once believed to be indicative of the Early Woodland Period can now be shown to have long histories in the Archaic. The only obvious criterion for distinguishing terminal Archaic complexes from Early Woodland is the addition of ceramics to the latter" (1976:16).

While the general patterns may have been established in the Archaic as Dragoo suggests, ceremonial mortuary practices in the Woodland Period take on the newer manifestation of more elaborate graves in earthen mounds perhaps as early as 2,850 B.P. (Clay 1976). In the process of expanding and elaborating the regional exchange networks, exotic materials such as steatite from the Middle Atlantic states and galena are included for the first time. Also, there is a continued and increased emphasis on plant husbandry. Seasonal subsistence rounds begun in an earlier period probably continued as suggested for Adena in central Kentucky (Webb and Baby 1957) and partially demonstrated for the McFarland Phase in central Tennessee (Butler 1979).

Early investigations into the Woodland of Alabama, Illinois, Ohio, Kentucky and West Virginia concentrated almost exclusively on burial mounds. More recent work on the Woodland of Tennessee, however, has been directed towards settlement and subsistence issues. This difference in emphasis brings to the forefront the realization that many Woodland peoples in the Eastern United States probably did not participate directly in the burial mound ceremonial complex. What the social-political relationships were among various contemporaneous groups is almost totally unknown. Present evidence suggests that the Cumberland drainage exhibits very little Early Woodland mound building compared to other areas.

Early Woodland

Early Woodland activity in the western Kentucky area has been documented at a number of excavated sites. Rolingson and Schwartz placed the Woodland components at the Roach Site prior to 2,450 B.P. and at the Morris Site, between 2,050 B.P. and A.D. 1. Mocas' (1977) excavation of the Lawrence Site, located near the Little River in Trigg County, Kentucky, has revealed an Early Woodland occupation. The presence of one to four wattle and daub houses suggested that the population was relatively sedentary. Here, Mocas uncovered a rectangular (17' X 13') structure. A similar structure was excavated by Carstens (1979) in Marshall County, Kentucky, at the base of a bluff on the floodplain of the Clarks River. Botanical remains from several features on the Lawrence Site included hickory and milkweed; however, no specific evidence for seasonality was reported. Several burials, including those of two children, were reported but a cultural affiliation could not be determined. Pottery from the site included Baumer, Long Branch Fabric Impressed and Mulberry Creek. Radiocarbon dates indicated a Woodland occupation from about 2,320 - 2,100 B.P. Generally, Mocas felt that his Early Woodland assemblage compared most favorably to distant Upper and Middle Tennessee River data, rather than the closer, more northerly assemblages in Illinois and Indiana. In the Barkley Basin Morse (1963:203) wrote that "evidence of Woodland is rare in our samples and we get the primary impression of hunting and fishing camps. More permanent sites must be in the area but did not form a major part of any of the eight sites investigated." Although Morse's Woodland data was given to generalization in summary statements, projectile points often identified with the Early Woodland were recovered. These included Adena-like, Wells-like and Mulberry Creek points from the Buchanan, Walter, Hagan and Gafford sites. Earlier work in the same general area conducted by Coe and Fischer (1959) also hinted at Early Woodland activity. Tools similar to those found by Morse (1963) were recovered on the Ralls and Stone sites. Early Woodland activities, however, could not be isolated.

The fact that most Early Woodland sites excavated to date are rather ephemeral may reflect some unfathomed aspect of Early Woodland occupation in this area. Jolley (1978:133) observed that on the Cumberland floodplain during the Late Archaic/Early Woodland "there is a tendency for a greater number of sites and more intensely occupied sites to occur in the Outer Nashville Basin than in the Western Highland Rim." Further up the Cumberland drainage in the Caney Fork River, Jolley (1979) also suggested that there is less cultural debris and fewer sites in the Early Woodland than in the preceding Late Archaic. Other data collected by Autry and Jolley (1980) is contradictory, however. The latter found seven upland Early Woodland sites in Wilson and Williamson counties during a power transmission line survey. These sites were defined as Early Woodland by the presence of Gary, Morhiss, Adena and Cotaco Creek points. In the same survey only four Late Archaic upland sites were documented. The occurrence of exotic steatite, which hints at expanding exchange networks, is also observed for the first time in this area during the Early Woodland.

Traces of the Early Woodland in the Middle and Upper Cumberland are confined to scattered survey and testing projects which recovered a variety of temporally and culturally diagnostic projectiles and ceramics. Ball (1979) discussed Mulberry Creek Plain ceramics at Site 40JK3, dated from 1,980 B.P. to A.D. 745, and more generalized Woodland activity at undated Sites 40JK33 and 40JK36. Hanson (1960) conducted an analysis of the Wolf Creek Dam ceramics and developed a pottery sequence for the area which had definite beginning in the Early Woodland and which Haag (1947) termed transitional Woodland and Adena. Two other ceramic periods, Woodland-Mississippian and a pure Mississippian, were tenatively identified.

Near the Cumberland drainage in the uplands of Warren County, Schock and Dowell (1981) excavated an Early Woodland burial which was radiocarbon dated to 1,965 B.P. +/- 110 years. Adena and Turkey Tail points were recovered and a feature which dated to 2,020 - 2.070 B.P. +/- 105 years was found to contain ceramic sherds. Sixty percent of the rim sherds were limestone tempered and 76% of the rims were cord roughened. Other Early Woodland diagnostic artifacts have been identified on the Mississippian Plateau area of the Middle Cumberland in south-central Kentucky by Boisvert and Gatus (1977). These items included Adena, Robbins and Kramer projectile points. In the more extreme Upper Cumberland drainage Early Woodland activities have been identified in the Rockcastle River area by Earth Systems (1979). A single site representing this period was located in a rockshelter.

The relative lack of Early Woodland data from the Upper Cumberland probably reflects a sampling error because neighboring drainages such as the Kentucky River to the north have long been known to contain a substantial Adena occupation. Also, in the Tennessee River and other rivers in central and eastern Tennessee, substantial data has recently been collected pertinent to this period. Davis (1978) presented a brief culture history of the upper Duck River (this area is generally located 60 air miles southwest of the present project area). During the Late Archaic/Early Woodland transition, dated from 3,050 - 2,650 B.P., a phase designated as Wade was established for the area. Participants in the Wade Phase, which is considered contemporaneous with Adena to the north, appear to have integrated only a portion of the Woodland culture. For example, Wade people did not produce pottery. Davis (1978:420) notes that, "the retarded appearance of diagnostic 'Woodland' innovations is probably not unique to the Upper Duck Valley; it may, in fact, be typical for most regions of the Middle South outside the major river valleys." At the Wiser-Stephens I Site the Wade occupation was interpreted to de-emphasize the overall importance of gathering (or reflect a brief occupation) compared to the earlier Ledbetter Phase, and to have functioned temporally as a fall hunting station.

Discussion of the Early Woodland

The overall picture of transitional Late Archaic-Early Woodland in the Cumberland Valley is not well-understood. Existing data suggests that at least semi-permanent, rectangular houses were being built in some areas such as the Lower Cumberland/Tennessee, but that seasonally available resources still played a significant role in the subsistence economy. Exchange networks expanded to include the introduction of at least one new exotic -- steatite. Exchange of exotic materials can be interpreted as signs of at least a rudimentary social stratification with the regional populations. There also appears to be stronger ties, as reflected in the material culture, with more southerly cultural phenomena than with those to the north.

Middle Woodland

The Middle Woodland of the Eastern United States is often portrayed as a period dominated by Hopewell and related regional ceremonial complexes. Havanna, Ohio and Kansas City Hopewell, Copena, Marksville and Swifts Creek, for example, definitely indicate the arrival of the most elaborate prehistoric cultural phenomenon up to this time. And, they appear firmly rooted in Early Woodland Period, as opposed to being introduced through diffusion, migration, etc. Some of the additions to the material inventory of the Hopewell, and related cultures, include the construction of elaborate burial and effigy mounds, the continued expansion of exchange networks which would eventually bring exotic obsidian from Wyoming into local and regional villages and ceremonial centers, elaboration of ceramic decorative motiffs and new variations in the chipped stone tools (particularly certain broad-based, expanded stem projectile points such as Steuben, Lowe, Bakers Creek, Snyders and Mankers). Other aspects of this period include pronounced social stratification and greater residential stability.

Interaction among various Middle Woodland groups is evidenced by the distribution of exotics and certain ceramic wares. However, the degree of participation in these local ceremonial complexes by indigenous populations has in no way been quantified.

Documentation of Middle Woodland activities in the Cumberland River drainage is growing but mention of Hopewell is nominal. Recent surveys in Christian (Sanders and Maynard 1979) and Hopkins (Weinland and DeLorenze 1980) counties, Kentucky, have identified approximately 30 sites with Middle Woodland components in the Cumberland and neighboring Tradewater drainages. In the Hopkins County survey, Middle Woodland components were found on 33% of all recorded sites.

A Woodland site (Owen) dating from 2,025 B.P. to A.D. 95 was reported by Allen (1976) in the neighboring Lower Tennessee area in Marshall County, Kentucky. Allen (1976:5) states that "generally, the Owen site can be characterized as a relatively small village or camp occupied probably on a seasonal basis, over a substantial period of time during the Middle Woodland Period. Little is known of the economic activities of the inhabitants, but the presence of a number of pit features may indicate the storage of some vegetal food product, probably nuts. If this is the case, then at least part of the seasonal occupancy occurred in the fall when both hickory and walnuts would have been readily available."

Other Middle Woodland sites have been documented in the floodplain of the Cumberland River by Schwartz and Sloan (1958) and in the Barkley Basin by Coe and Fischer (1959).

In Trousdale County, Tennessee, McCollough (1972) conducted a survey of the proposed Antioch and Johntown Steam Plants. Four miles north of the Antioch plant site he reported the locally famous Castilian Springs Site which has been excavated several times; however, there is no published literature on the investigations. Initially, the site was reported as a fortified Mississippian town. Four mounds were known to have existed and painted water bottles and stone box graves were uncovered. McCollough (1972:7) notes, however, that it was a Woodland site as well and reports that "the Woodland occupation is indicated by the presence of a burial in a log pen and graves richly furnished with such materials as cut mica ornaments, conch shell cups and a gorget carrying a representation of a severed human head."

Further upriver Jolley (1978:135) concluded from survey that "sites of the Middle Woodland time period are evidenced by the presence of Copena and Bakers Creek projectile points/knives and by the occurrence of core and blade work. Prismatic bladelettes are the most prominent lithic artifact. Medium to large triangular projectile points of the Middle Woodland variety tend to conform in the majority of instances to the Copena type rather than the McFarland type."

Elsewhere, Weaver (1978) has documented four Middle Woodland terrace sites in Smith County, Tennessee. Although the sites were multicomponent, Bakers Creek, Turkey Tail, Sublet Ferry and "Spike Cluster" projectile points were recovered and seem to indicate a Middle Woodland presence.

At the Denney Site (40SM69) approximately 1.5 miles south of the proposed Hartsville Nuclear Plant, Weaver and McNutt (1979) investigated a multicomponent prehistoric and historic site which spanned the Early Archaic to Mississippian in its prehistoric component. Evidently a rather substantial Middle Woodland component was represented because 11 of the 38 recovered projectile points were identified as Copena/McFarland.

On the Caney Fork River, Jolley (1979) identified his Middle Woodland components as McFarland Phase sites (see discussion below) which were characterized by the occurrence of Copena and McFarland projectile points. According to Jolley, there does not appear to be any significant breaks in the settlement/subsistence strategy between the Late Archaic and Middle Woodland. The later Middle Woodland Owl Hollow Phase (see discussion below) in this area was portrayed as evidencing a change in the subsistence strategy brought about by incipient horticulture. Concerning Hopewell/Copena in the Middle Cumberland, Jolley (1978) noted the only Middle Woodland mound group on the Cumberland drainage was the Glass Mounds, located on the Harpeth River near Franklin, Tennessee. Because the mounds have been heavily plundered, little solid data for Hopewell/Copena activity is available; however, it appears that cremations were accompanied by offerings of copper, galena and mica. To the northeast, in Wilson County, Tennessee, Autry and Jolley (1980) recorded a single upland Middle Woodland site defined by the presence of a Bakers Creek point.

At the Shambles Site, near Dover, Tennessee, Coe and Fischer (1959) reported one sherd which resembled Illinois Hopewell stamped wares. To date, this is the best report of a Woodland site in the Lower Cumberland floodplain. Apparently, Shambles contained both a Woodland village and a low Mississippian temple mound. The village midden reportedly was scattered over an area 400 m long on the bank of the Cumberland River. It was bounded on the west by a swampy area and artifacts were reported in a poor state of preservation due to the soggy nature of the soil. Most of the 2,684 sherds recovered came from the village area and were predominantly "Woodland." Mulberry Creek Cord-Marked made up 90.8% of the Woodland sherds (Coe and Fischer 1959:31). Minority types included limestone tempered wares identified as Hamilton Plain, Candy Creek Cord-Marked and Wright Check Stamped. The Woodland village area also yielded data similar to, but not strictly comparable (because of differential data recovery techniques) with Hurricane Branch. In Test Square 2, Coe and Fischer (1959) state that the unit "... was dug in the trees by the river bank, in expectation of being able to cut in from the edge of the bank...Similar stratigraphy [to Test Square 1] was found, and it was seen that below the sterile tan soil lay a very deep deposit of dark grey, hard 'gumbo', sterile also except for occasional charcoal flecks." This gumbo, if comparable to Test Unit 1, was probably 20 - 25 cm thick. Though the site was predominantly Archaic, a similar "gumbo" was identified at the Wallace Site about 1 km from Shables on the north side of the river. Here the "gumbo" contained charcoal flecks and an occasional artifact fragment in a matrix which had apparently been deposited in a depression in the hardpan. Woodland artifacts, though few in frequency, included one Mulberry Creek Cord-Marked and two McKelvey Plain sherds.

In the Kentucky portion of the Barkley Reservoir, Schwartz and Sloan (1958) found grog tempered Baytown Plain and grog tempered Mulberry Creek Cord-Marked sherds in association with triangular projectiles at the Driskill Site. In 1958 they assigned the site to the late Middle Woodland but later (1959) assigned it to the Late Woodland.

Middle Woodland data from the Middle Cumberland are scarce. Ball (1979) reported isolated Middle Woodland artifacts at Salt Lick Creek at Sites 40JK3-A, 40JK35 and 40JK33. A feature was uncovered at Site 40JK36 which could not be tied to the Woodland occupation of that site but which does bear considerable similarity to features excavated at Hurricane Branch. This feature demonstrated *in situ* burning, a large quantity of limestone, some fired clay and botanical remains identified as maygrass and chenopodium. At Site 40JK33 a series of circular posts, radiocarbon dated at A.D. 675, lay beneath a very dark midden/plowzone. One limestone tempered sherd was associated with the posts. Three other Woodland projectiles and three additional limestone tempered plain sherds were recovered.

Archaeological work at Wolfe Creek Dam in south-central Kentucky was initially reported by Haag (1947). He cites the presence of "ground-base (Hopewell) stemmed projectile points" (Haag 1947:7) and 34 Copena-like points found in 11 of the 36 sites investigated (Haag 1947:12). In the neighboring Green River drainage, near South Hill, Kentucky, Allen (1971) reported that the Watkins Mound, which was dug by amateurs, yielded 23 Copena Triangulars, a cache of lamellar blades, Bakers Creek points and other artifacts including zone punctate design pottery. Allen interpreted the site as Hopewell. Also in the Green River drainage, near its headwaters in Adair County, Kentucky, Boisvert and Gatus (1977) documented isolated Steuben and Copena points. Most significant, however, was the documentation of grave goods from two destroyed mounds at Site 15AD59. These artifacts included a copper bead, a ground stone elbow pipe, a gorget fragment, a sheet of mica, lamellar blades and Copena Triangular projectiles.

Reports of Middle Woodland sites in the Upper Cumberland are rare due to a lack of work in the area. Earth Systems (1979) reported one such site in the Rockcastle River bottoms. A survey of the Big South Fork of the Cumberland

(Wilson and Finch 1980) has produced Middle Woodland sites on the floodplain; however, the Woodland in general appeared best represented in rockshelters, and to a lesser degree, in the upland ridges. DeLorenze (1979) also encountered one Middle to Late Woodland rockshelter on the south slope of Pine Mountain, Bell County, Kentucky.

Discussion of Middle Woodland

At present, the overall Middle Woodland occupation in the Cumberland River Valley reveals evidence for contact with Hopewell and Copena in at least the middle and lower portions of the drainage but there is little evidence for any epicenter of "classic" manifestations such as elaborate burial mounds and geometric earthworks. A review of existing literature for this valley does suggest that the Cumberland River Middle Woodland appears to share more characteristics with southeastern Middle Woodland than the northerly expressions such as Havana and Ohio Hopewell. If the major influences at this time are indeed to the south then a closer look at the Middle Woodland from that area is in order.

To begin, there are two phases defined in the Middle Tennessee Valley that are contemporaneous with the northerly Middle Woodland. These are the McFarland (Bacon and Ball n.d.) (2,150 B.P. to A.D. 200) and Owl Hollow (A.D. 200 - A.D. 700) Phases (Faulkner 1968).

The early Middle Woodland McFarland Phase is characterized by a settlement pattern which consists of small encampments which exhibit only a few structures. Many of the sites from this phase are located on floodplains and terraces. Hunting camps are apparently located in adjoining uplands (Butler 1979). Davis' (1978:423) work on the Wiser-Stephens I Site led him to speculate that McFarland could be typified as "a dispersed type of settlement pattern involving semisedentary encampments of small groups, probably nuclear or extended families."

Although some cultigens, such as squash have been found in association with McFarland, the degree of emphasis on cultigens as a food source is not well-understood. Assuming for instance that one of the reasons people dig storage pits is to cache vegetal foods, then data from Wiser-Stephens I indicating that storage pits were even smaller than previous Archaic pits implies that while plant husbandry is on the increase, concern with storage capablities is on the decline. Other features found on McFarland sites include hearths containing large quantities of limestone.

McFarland artifacts are very similar to Copena in that medium size triangular projectile points and limestone tempered ceramics (which may be carved paddle stamped or fabric impressed) are found in both (Davis 1978:423). Associations with other Middle Woodland cultures is not documented but Davis (1978) feels that McFarlan contains little, if any, evidence for involvement in the Hopewell Interaction Sphere.

The transition from McFarland to Owl Hollow is considered a cultural disconformity by Faulkner and McCollough (1974:333) who state:

> It is hypothesized with some confidence at this time that a major disjunction in the pattern of local Middle Woodland life occurred ca. A.D. 1-100. The factors conditioning this change, possibly relating to subsistence activities or changes in external contacts, remain unknown, and little can be developed at this time except the notation of distinct yet not wholly unrelated configurations: of architectural, lithic and ceramic traditions; these are tentatively dichotomized with the appellations Owl Hollow phase...and McFarland phase.

Sites related to the Owl Hollow Phase which is the temporal successor to McFarland have been found in the wide floodplains of the upper Duck and Elk rivers and along marginal streams in the uplands. The Owl Hollow, as indicated by the type site, consists of a circular village pattern surrounding a relatively debris free plaza area. Summer and winter occupations appear spatially discrete. Winter houses (defined by the occurrence of large earthen ovens, substantial structures, large storage pits, lack of aquatic fauna and abundant evidence for white-tailed deer and hickory nut exploitation) were placed along the outside perimeter of the village circle while the summer houses (defined by small structures lacking hearths or ovens and containing prolific amounts of aquatic fauna) were located near the plaza area.

According to Cobb and Faulkner (1978:2), winter houses at the Banks III Site were found to contain double ovens which averaged:

> 1.4 m in diameter and .60 m deep containing limestone blocks and fragments that served as a heating and cooking surface. Botanical remains in these ovens consisted almost entirely of charred wood and nut shell. The dark middens on these sites seem to have resulted from the discharge from these features. The superstructure of these dwellings consisted of four large and deeply set

interior support posts installed at each side of the centrally-placed earth ovens with a square crib of horizontal timbers placed atop the posts that probably suported a sloping conical roof. The exterior walls were round or oval in plan and consisted of small vertical posts or stakes. The largest of these structures, a single dwelling discovered on the Banks V Site, was almost 15.2 m in diameter and had large interior ovens 2.4 m in diameter and 1.2 meters deep (Cobb and Faulkner 1978).

The other structures at Bank III consisted of at least two dwellings with a lighter framework and no interior fireplaces or earth ovens; one was an oval house with a tensioned wall-roof framework, the other was a rectangular structure with a complex interior arrangent of posts that probably supported a pitched roof. These structures have been interpreted as summer dwellings (Faulkner and McCollough 1974; Faulkner 1977). Clusters of postholes representing rebuilt dwellings with no substantial interior heating facilities on the Banks V and Eoff I sites may also represent warm season houses. (Cobb and Faulkner 1978:2).

Other characteristics of the Owl Hollow Phase include bell shaped and cylindrical storage/refuse pits containing charred wood and hickory nut fragments, earth ovens with similar contents and shallow oval roasting pits with the same general contents (Cobb and Faulkner 1978). The midden at the type site contained much burned limestone and was "choked with cultural material such as ceramics and prolific ecofacts such as gastropods and pelecypods" (Cobb and Faulkner 1978:75). Diagnostic lithics include New Market and Bradley Spike projectile points and certain bipolar microliths interpreted as drills. The ceramic assemblage is basically limestone tempered with minor amounts of sand, grit and chert present. At the Owl Hollow Site 11% of the sherds were simple stamped; 2% were complicated stamped. Cobb and Faulkner (1978:96) have summed up the Owl Hollow Site as follows:

The abundant floral and faunal samples recovered at the Owl Hollow site suggest differential exploitation of numerous econiches based on a seasonal scheduling scheme. Essentially, this upland site was riverine/creek oriented during the spring and possibly throughout the warm season until early fall. Squash, gourd and sunflowers were raised in disturbed ground around the site or in the narrow floodplain of Town Creek. In the fall, the orientation shifted to upland exploitation of arboreal seed crops, herbaceous annuals and possibly white-tailed deer. The storage of surplus food was divided between the warm and cold season dwellings rather than being exclusively cached near or inside the winter lodges. Differential habitat exploitation associated with dual structure types indicates that the Owl Hollow site was occupied year around for a number of years until local resources were depleted in the surrounding area.

Additionally, there is evidence for maize at other Owl Hollow sites such as the Peters Site, located on a terrace of the Elk River.

Subsistence activities are considered central to the function of the Hurricane Branch Site. As such, a closer look at Middle Woodland subsistence patterns is necessary.

To begin, Crites (1978), reporting on Owl Hollow plant use, observed that botanical data collected on the upper Elk and Duck rivers indicates that Owl Hollow people were exploiting a wide range of ecosystems, including uplands and lowlands, and were cultivating squash and probably sunflowers between A.D. 200 - A.D. 300. By A.D. 450, Owl Hollow populations were locating on river terraces, exploiting more of the terrace floral resources such as maygrass and goosefoot and beginning to cultivate maize. This particular development is substantially different from what Ford (1979:234) noted for Ohio Hopewell when he stated "In comparison with Late Archaic and Early Woodland from Kentucky shelters, no native cultigens, maygrass (Phalaris caroliniana), sumpweed or sunflower have been found in Ohio Hopewell sites." It is apparent from this that several of the genera exploited in south-central Tennessee were also used in Kentucky but not further north, or at least not as extensively.

Concerning the use of maize during Middle Woodland, it is presently doubtful that maize formed a major constituent of the subsistence economy, at least in the north. Recently, Bender et al. (1981) conducted a 13C/12C ratio analysis of 19 Hopewell burials from Wisconsin, Illinois and Ohio and compared them to Archaic, Late Woodland and Mississippian burials. They found that "The similarity of the Hopewell measurements to those of nonmaize diets indicates that corn was of little importance in the Hopewell diet for those populations tested" (1981:346).

If maize were not a primary food stuff (assuming for argument's sake that this generally applies to populations in the southeast), but appears occasionally in the archaeological record along with other cultigens, then a suitable habitat(s) for "crop" production must be identified. Since populations were becoming less reliant on climax forest products during the Middle Woodland, and less mobile, Ford (1979:236-237) suggested the following:

> Alternative resources to nut resources are generally small seed ruderals, which invade disturbed and barren ground habitats. To be useful, however, ruderals must occur in communities large enough to warrant collecting, and there should also be more than one kind available, so as to provide the necessary nutritional complementarity. The best localities for such resources are wide river bottoms, as Struever (1968b) suggested, which may be disturbed by annual flooding with a new alluvial cover serving as the nursery bed. Ecologically speaking, these are primary successional plants with high yields as long as disturbance continues, with high predictability, and a high "harvest cost" and preparation time.

Ford also noted that at least two plants, goosefoot and pigweed, do not colonize burned areas.

Other factors which may effect settlement and subsistence in riverine environments where plant husbandry may be important have been discussed by Smith (1978) and, though applied to Mississippian settlement patterns, may be very pertinent to Middle Woodland subsistence patterns. Smith (1978:488) postulated that the locations of many Mississippian sites was related to two "Energy Captor Factors":

1) the availability of well-drained, easily tilled, energy subsidized natural levee soils suitable for horticultural garden plots.

2) easy access to rich fish and waterfowl protein resources of channel remnant oxbow lakes.

The Shambles Site (Coe and Fischer 1959), which was discussed above, fits this model in that it is situated exactly on the bank of the river and is bounded on one side (west) by a swampy area and pond. It may be more than fortuitous that Shambles also contained a Mississippian component which included a mound. The extent to which the Hurricane Branch Site compares to Shambles and the energy captor model is addressed in Chapter VII.

In addition to wild plant foods and cultigens, there are other plants and minerals available in the Middle Cumberland that may have been important to the local and perhaps regional subsistence economy. Salt, for instance, has long been recognized as an important subsistence item. Walthall (1973) noted that as Hopewell people became more reliant on plant foods, their salt intake would have to be supplemented, probably through trade, though there is no direct evidence of this. At least one salt lick was known near the Hurricane Branch Site. Swanton (1946:302) documented the exploitation of salt along Flynn's Creek by historic Indians. This source is only 3 air miles from Hurricane Branch. Another item locally available in much of the southeast, particularly along the rivers, including the Tennessee River, and probably the Cumberland by extrapolation, was hemp. Walthall (1973:525) reports that this plant was found to be the source of string used with copper beads among Copena people.

One set of information missing from the Middle Woodland in much of Middle Tennessee, exclusive of Copena, is mortuary data. For instance, burials have not been reported for the Owl Hollow or McFarland sites. Quite interestingly there are no burials associated with Copena villages either. As Walthall (1973:207) has noted, " All known Copena mounds are located well away from contemporary village sites. While typical Copena burial goods, such as copper reels, earspools and galena nodules, are abundant at mound sites, these objects have never been recovered from habitation sites." Non-mound Middle Woodland burials in the Eastern United States, in general, have not been well-documented. Until such time that more data is available, the burials from Hurricane Branch will remain anomalous.

Another aspect of Middle Woodland culture that is almost completely undocumented is the flow of various exotic goods through the economic/exchange networks. Struever (1961) postulated that raw materials and stylistic ideas, not finished goods, moved through a network he defined as the Hopewell Interaction Sphere. But the question of who and how have yet to be addressed. Somewhat later, and in consideration of a proposition by Kellar et al. (1962) that the Copena people were middlemen in a trade network, Walthall concluded that he concurred "with Faulkner in his belief that the trade routes between the Copena heartland in the Middle Tennessee Valley and the Ohio Valley were most likely an overland route through Middle Tennessee, particularly through the Nashville area" (Walthall 1973:507). Such a hypothesis is somewhat difficult to address with recent Cumberland Valley archaeological literature but accounts such as that given by Clark (1878) indicate that both galena and copper, extracted from the Glass Mounds, were incorporated into local mortuary complexes; and, it is quite likely that these mounds were Middle Woodland in origin.

Late Woodland

The transition from Middle to Late Woodland is not well understood in the Cumberland drainage. Changes in material culture, mortuary ceremonialism and probably subsistence patterns, are fairly evident but the causes for such changes are not.

Archaeological work geared towards understanding the Late Woodland in the Lower Cumberland began with Schwartz and Sloan's (1959) investigation of the Driskill Site. This site, located .6 mi below the dam on Lake Barkley, was investigated prior to its destruction for a borrow area. A total of two features, one posthole and an ash lens, were recorded. Most of the projectiles were small triangular points, probably Madisons, which are usually considered Mississippian in origin. Ceramic collections, however, were dominated by Baytown Plain and Mulberry Creek. Only one Mississippian Neeley's Ferry Plain sherd was found. Schwartz and Sloan (1959) suggest that the Driskill Site represents a very Late Woodland occupation and is similar to the Lewis and Dillinger phase sites of southern Illinois. Allen (1973) in a later analysis of the Driskill data (divided into Driskill #1 and #2 by Clay 1963) concurred with Clay on the presence of two Late Woodland occupations; the first dating between A.D. 200-600 and a second occupation around A.D. 900. The distinction between these occupations was defined on the presence or absence of minor types in the ceramic assemblage, specifically the presence of Blue Lakes Cordmarked and O'Neal Plain in Driskill #1, and the absence of these types in Driskill #2, but with the addition of Yankeetown Incised and Neeley's Ferry Plain. Allen (1973) compared Driskill #2 to the Dedmon Site and later added the following attributes to Driskill #2: features including small circular fire hearths, and circular storage pits. Many of the latter have not yet been analyzed. Although Late Woodland house structures were not observed at Dedmon, Allen speculated that rectangular patterns of post should be associated since they have been found to the north to date to the same period. A later publication by Allen (1976) summarized this site. Allen suggested that Dedmon represents a semi-permanent occupation with a strong emphasis on hunting and gathering. Isolated post molds found near the Mississippian house may have been remnants of "drying rocks, the bases of raised storage structures or open-air ramada-like structures" (Allen 1976:77). No evidence was found for the presence of cultigens but Allen speculated that their absence was probably due to poor preservation. Finally, Allen suggested that Dedmon represented an indigenous population (Woodland) which took on Mississippian characteristics through population movement.

The problem of Late Woodland/Mississippian transition is a complex issue in the Lower Cumberland. Excavations at the Page Site, on the neighboring Mud River in Logan County, in the late 1920s opened a veritable can of worms. The Page Site, originally reported by Webb and Funkhouser (1930), constitutes the largest known group in the Commonwealth of Kentucky, with 67 mounds observed. Unfortunately, the archaeological methods applied to initial excavations do not permit an adequate understanding of the complexity of this Late Woodland/Mississippian site. In neighboring Todd County, Kentucky, Long (1974) excavated the Hadden Site which apparently has a strong resemblance to Page. Long (1974) excavated a portion of 15TO1, village and mound site. The mound, approximately 15 feet in diameter, was composed of a circular crematory pit lined with rocks on the bottom and with vertically placed rocks for sides. Inside the basin was a rectangular stone box. Partial excavation of the basin and total excavation of the stone box revealed partially cremated remains of 15 individuals. A total of 30 to 50 burials were estimated for the entire basin. This mortuary complex was compared to the Harmon Creek Focus and Boone Focus of Missouri. Based on the presence of a diverse ceramic sample and a variety of Woodland and Mississippian projectiles, Long relegated the site to an Early Mississippian/Late Woodland affiliation with definite similarities to Page. Almost all additional data on the Late Woodland of the Cumberland River comes from survey data. Jolley (1978) cited recent but unpublished information on Site 40DV5B, a site north of Nashville on Mansker Creek currently under investigation by William Autrey. According to Jolley (1978:135), the site "has yielded a homogeneous assemblage of cord-marked limestone-tempered ceramics that is currently believed to belong to the early portion of the Late Woodland time period." From his own survey data Jolley (1978) concluded that the period along the Lower Cumberland was represented by Knights Island and "straight based triangular projectiles." These same artifacts were used by Weaver (1978) to identify four Late Woodland sites in Smith and Wilson counties. Three were located on terraces and one in the uplands. Later, Autrey and Jolley (1980) reported an upland Late Woodland site in Williamson County, Tennessee, defined by the presence of a Jacks Reef Pentagonal projectile point and various clay and grit tempered sherds.

Further upstream, in the Middle Cumberland River area Hanson (1960) discussed a Woodland/Mississippian component in the ceramic sequence derived from the Wolfe Creek Dam data. In Adair County, Kentucky, Boisvert and Gatus (1977) recovered a number of projectiles identified as Hamilton Triangular and Hamilton Stemmed. On the Caney Fork River survey, Jolley (1979) encountered few sites and a low artifact density for the Late Woodland. Most of the sites dating to this period were observed in rockshelters.

In the Rockcastle River drainage, in the Upper Cumberland, Earth Systems (1979) recorded seven Late Woodland sites, five in rockshelters and two in bottom lands. In Bell County, Kentucky, in the Cumberland headwaters, DeLorenze (1979) recovered only a few Late Woodland artifacts. These came from both an open floodplain site and a rockshelter on the south slope of Pine Mountain.

Discussion of Late Woodland

Late Woodland components appear to blend with Mississippian components on a number of sites in the Lower Cumberland Valley. In fact, the Late Woodland Period has not been well-isolated archaeologically for the region. Apparently Late Woodland people continued to exploit a wide varity of econiches but archaeological investigations up to this time do not provide sufficient data from which settlement/subsistence patterns can be inferred. Considering the elaborate nature of many of the Middle Woodland cultures, the Late Woodland by comparison appears to reflect a breakdown of existing economic networks and probably a destratification of existing soci-political structures. Virtually no evidence from the Lower Cumberland is relevant to these changes; however, the blurring of specific Late Woodland cultural traits in this period may also reflect an early involvement with the rising Mississippian culture. The extent and nature of the involvement is a matter of speculation. Data from the Middle and Upper Cumberland provide no illumination of the problems noted above.

Late Prehistoric Tradition

During this period, a complex of apparently contemporaneous cultural patterns existed in the eastern and midwestern portions of the United States. The dominant tradition to emerge in the Midwest was the Mississippian; however, Woodland patterns survived in some areas and regional traditions appeared in others. The extent to which the Mississippians influenced other groups is not fully understood but it is certain that they had an impact on other regional traditions such as Dallas, Oneota, Fort Ancient and Pisgah. The Mississippian pattern grew out of the Woodland, but with significant changes. Burial mounds continued to be built, but were overshadowed by the additional development of large and often spectacular flat-topped platforms or temple mounds. Ceramic technology improved and shell-tempered pottery largely replaced the stone, grog and grit tempered Woodland pottery. Habitation sites grew larger and denser -- at least at the major sites -- and urban level size and complexity were approached at several sites such as Cahokia, Angel, Kincaid and Etowan. Subsistence was derived from agriculture almost entirely, and maize, squash and beans provided the bulk of the diet (Willey 1966:292).

Mississippian culture emerged as the most complex prehistoric society in central and eastern North America after an apparent hiatus in complex socio-political structure following the Middle Woodland. Large ceremonial centers developed which were connected to outlying, and presumably subordinate, villages and hamlets. Differential burial practices point to an ever-widening social division between the upper and lower classes. At Cahokia, for instance, burials contain a wealth of grave goods and retainer burials associated with the principal burial. This is often interpreted as evidence for sharp cleavages between classes.

Mississippian Period sites have been the focus of archaeological investigation in the Lower Cumberland since work began in the region (Clay 1980:50). Excavations by Funkhouser and Webb (1931) at the Duncan Site revealed a stone box grave cemetery. During the W.P.A. days, a number of Mississippian sites were excavated in the lower Tennessee/Cumberland area but only one, Jonathan Creek, was analyzed and published. Other sites such as Goheen (Fryman 1966) have had preliminary reports prepared but not disseminated. For a variety of historical reasons sites such as Birmingham have had no substantial work conducted on the collections. Therefore, while a considerable amount of work was undertaken in the Kentucky portion of the Lower Tennessee, only a few sites have been adequately described. Data collected in the early 1960s for the River Basin Salvage Project in the Barkley Dam area produced a body of literature (Clay 1961, 1963a, 1963b, 1963c, 1963d, 1963e; Clay and Schwartz 1963; Schwartz 1961; and Schwartz and Sloan 1958, 1959) which has become the mainstay of archaeology in that area. In the Tennessee portion of the Lower Cumberland Morse (1962) described four sites with Mississippian components. These sites differ from those downstream in that temple mounds were not observed suggesting perhaps a differential adaptation, or a general failure to bring much of the Cumberland into the mainstream of the Mississippian lifestyle.

Among the earliest Mississippian sites to be excavated in the Lower Cumberland is the Williams Site (Webb and Funkhouser 1929). This is an upland site in southeast Christian County approximately 1.5 mi. southeast of Pembroke near Montgomery Creek, a tributary of the west fork of the Red and Cumberland rivers. The site consisted of a village, a quarry, a mound and a cemetery. The mound was 140 feet in diameter and 10 feet high. It contained several ash layers and evidence for several construction episodes. Apparently two limestone platforms were constructed. Several rows of post molds were identified but they do not appear to form the total outline of a house. Webb and Funkhouser stressed the orientation of these posts (aligned with the cardinal points of the compass) and compared them to a Natchez temple. Evidentally the walls of this structure were covered with wattle and daub. Charred maize cobs (8 rows) were found on the floor, as was a large pile of periwinkle.

Two burials located in the mound were considered possible aboriginal intrusions. Grave goods found in association with them included two shell gorgets, one of which was scalloped and incised with a swastika design, a human effigy water bottle representing a seated female, a chert knife and human face effigy made of fluorospar or amethyst. Also in the mound fill was a scattering of pot sherds, some of which would be presently identified as Kimmswick Fabric Impressed.

Apparently Webb and Funkhouser did not attempt to excavate any portion of the quarry or the village, just the cemetery area and the mound. Graves in the cemetery area all appear to have been of the stone box variety. A total of 15 were opened. Grave goods included a double conoidal pottery pipe tempered with sand, two flint nodules and one small bowl. In Grave 16 they note:

> At the head of the grave was found a complete, simple undecorated bowl six inches in diameter and beneath the bone burial was a peculiarly grooved stone, probably a whetstone, a small flat worked base, a small bone awl, a white pebble, and a sphere of red oxide of iron... These last four may represent the remaining contents of a medicine bag (Webb and Funkhouser 1929:23).

Other early excavations of probable Mississippian Period sites in this area include the Gordon Town Site and the Fewkes Group near Nashville (Myer 1928). The Gordon Town Site appears to be an upland phenomenon but it is difficult to determine from the report. If Gordon Town is upland, then it may be functionally comparable to the Sellars and McRay sites discussed below.

The Gordon Town Site consisted of an 11.2 acre fortified village which included two mounds (one of which evidenced multiple construction episodes), a cemetery, an area of scattered graves, 87 house circles and a town square. From Myers account it appears that all of the houses were circular in design except for two. These houses were about 30 feet in diameter and were constructed of post 2 to 6 inches in diameter. Wattle and daub were used to plaster the walls.

Some of the houses had child burials under the floors which was quite similiar to a pattern documented at Tinsley Hill (see discussion below) and other late sites in the Lower Cumberland. The Gordon Town pattern varied, however, in that the children were placed in small stone slab boxes. Myer conjectured that the site was abandoned because there were no signs of an attack.

The Fewkes Group (Myer 1928) overlooks the Little Harpeth River. This site consisted of five mounds, a plaza area, a dozen house circles and a small stone-slab cemetery. Like the Gordon Site, Fewkes had a major mound built in several stages, each of which contained a burned structure. The association of ash beds, a metate, mussel shells, a discoidal, and the presence of several structures suggested to Myer the mound may have functioned as a dwelling as well as a ceremonial structure.

Similar to other Lower Cumberland sites of this period, child graves were found under house floors. Mortuary practices in general included bundle and flexed burials in rectangular, hexagonal, octagonal and circular stone graves. Myer concluded that, unlike the Gordon Town Site, Fewkes was purposely destroyed. He also mentioned the presence of other sites, some of which were probably Mississippian in origin, such as the Rutherford-Kiser mounds in Sumner County; mounds at the confluence of Dog Creek and the Harpeth River and a fortress at the confluence of the Harpeth and Cumberland rivers. Unfortunately, no further published works were found concerning these sites.

The site central to most of the discussions of Mississippian in the Lower Cumberland/Tennessee area is Jonathan Creek, a large village and mound complex near the Tennessee River in Marshall County, Kentucky. Webb's (1952) excavation revealed several stockades and bastions enclosing 89 structures of various types, which were dominated by square houses with both post and wall trench construction. Rebuilding in several areas coupled with the extensive size of the site suggests a fairly long occupation. Virtually every other Mississippian site in the area has been tied to Jonathan Creek, which was usually interpreted as a pioneer settlement. The Tinsley Hill complex (Clay 1961, 1963a, 1963b and 1963e), located in Lyon County, Kentucky, was tied to the Jonathan Creek sphere of influence evidenced a temple mound, village and cemetery area. Clay (personal communication) also speculates that a stockade is probably present but none was uncovered during excavation. The temple mound, about 7 m high with a base of 22 x 18 mm and possessing a possible ramp, was substantially smaller than at Jonathan Creek. The mound, which contains six submound features including wall trenches and single posts, was built in two stages: the first stage after A.D. 1500 and the second after A.D. 1550 (Clay 1963a:35). Tinsley Hill village had three components: Early and Late Mississippian separated by a non-Mississippian occupation. Clay (1963b, 1963e) places the entire mound and village complex at A.D. 1400 to 1662. House structures usually contained a central hearth and were typically rectangular with deep wall trenches. Evidentially, most of these houses were destroyed by fire. Burial patterns varied between children, who were often buried in the corner of houses along with burial offerings, and adults, who were placed in stone lined graves in a cemetery area. Clay (1961) reports the recovery of corn, beans and squash from midden pits.

Goheen, a Late Mississippian site on the Tennessee River floodplain, only 3 miles downstream from Jonathan Creek, shares many similarities with Tinsley Hill. Fryman (1966) discussed the presence of a variety of house styles, four in all. Like Tinsley Hill, many of the Goheen houses were burned. A single child burial was located beneath a house floor, a practice common to Tinsley Hill also. According to Fryman, three stockade lines were reported in the original excavation notes but only one was fully recorded. Of the seven fire basins excavated at Goheen, four were found within house structures.

Also near Tinsley Hill was the Rogers Site located near the confluence of the Little River and the Cumberland (Clay 1963c, 1963d). This is a small farmstead which Clay (personal communication) feels would date to the early seventeenth century, though in the report he offered a date of A.D. 1680. Another small farmstead, the Roach Site (dated to A.D. 1540 +/-85 yrs), was excavated in Trigg County, Kentucky, on the Cumberland River. Sites in the surrounding drainages which date to this period include the Morris Site, on the Tradewater, near Madisonville, where 12 houses exhibiting a variety of construction styles and two stockades were identified. The Jewell Site (Hanson 1970), located in the Green River drainage, contained a flat topped temple mound which was begun around A.D. 1000 with the final construction taking place around A.D. 1400. Twenty-two houses were identified, 18 of which had wall trenches and were rectangular. Two circular houses containing wall trenches were also found. About 25% of the houses exhibited prepared floors and 22% had fire basins inside these structures.

Mississippian sites in the Tennessee portion of the Barkley Basin include Shambles, Stone (Coe and Fischer 1959), Hogan, Walter, Buchanan and Brake (Morse 1963). Together they reveal a variety of site types.

The Shambles Site, Stewart County, Tennessee, exhibited evidence of two occupations, Woodland and Mississippian. A

Mississippian temple mound, which was partially excavated, was evidently built on top of a Woodland mound. Contemporaneous with the Mississippian construction was a clay floor and rectilinear post mold pattern. Nearby in Coe and Fischer's Trench C, two Mississippian Stone Box graves were uncovered approximately 10 m from the river bank. No burial offerings were found with these adults. One of the burials had the broken tip of a small projectile lodged between two thoracic vertabrae. Three other looted stone box burials were located in the same trench. Coe and Fischer (1959:38) placed Shambles in the Early Mississippian based on the frequency of Neeley's Ferry Plain (89.8%) and Bell Plain (3.4%) ceramics. About 2.4 miles downstream from the Shambles Site, Coe and Fischer worked on the Stone Site. They recovered a substantial amount of domestic debris including mussel shells, gastropods, the charred bones of deer and other animals, charred split cane and "charred corn cobs and ears" (Coe and Fischer 1959:48). Stone box graves were noted nearby.

At the Hogan Site, Stewart County, Tennessee, Morse (1962:129-130) developed the following scenario:

> We get the picture of a five acre village with permanent houses, a stone box cemetery, a possible centrally located ground level temple, and ten potential acres of relatively prime agricultural land. The artifact inventory is not rich. There is not much variety and very few of the artifacts could be called exotic. Our sample is small and perhaps not representative, but the number of artifacts seems quite small considering the amount of excavation and the cultural stage being investigated. If the Hogan Site is Middle Mississippi and the alleged finds of Duck River-like artifacts correct, it would seem that either the site is one of several sites interacting with a ceremonial center (at Indian Mound on the Tennessee River ?) or is a washed down (peripheral ?) version of 'classic' (not used in the Willey and Phillips sense) Mississippi.

Elsewhere in the Barkley Basin Morse (1963) compared the Buchanan Site to other excavated Stewart County sites (specifically the Hogan and Walter sites) and noted that no village mound was present. At the Brake Site Morse reported that "Mississippian artifacts are associated with a house floor and polished flint hoes were found behind the house indicating that this area had been cultivated" (1962:196).

One artifact type, Salt Pan wares, transcended all of the Barkley Basin Mississippian sites. This suggested a heavy exploitation of salt, which, as discussed above, is an important subsistence item for people extracting a large portion of their diet from plant foods. A survey conducted by Autry and Hinshaw (1978) of the Cross Creek National Wildlife Refuge in Barkley Basin revealed the presence of three new Mississippian sites in addition to several documented by Morse which were revisited. The new sites included 40SW81, a hamlet or small village located near the Huntington soils, the Commissary Ridge Site (40SW80) which contained a village, a quarry/workshop and a stone-box-grave cemetery and the Barton Site (40SW82), a village and cemetery site.

Jolley's (1978) survey data, collected west of Nashville and not too far upstream from the Barkley Basin area, suggests a conspicuous absence of large Mississippian sites. Although there were two mound complexes near the survey area, he noted that most of the mounds in the Nashville basin were located on tributary streams, while mound sites in the Western Highland River were located in the main river valley. Both socio-political and environmental factors were perceived as responsible for the apparent settlement pattern (Jolley 1978:139). The issue of large Mississippian sites in tributary valleys is one that deserves more attention. In the Lower and Middle Cumberland at least two major sites have been found in upland settings; the McRay Site, Christian County, Kentucky, (Sanders and Maynard 1979), and the Sellars Site, Wilson County, Tennessee (Butler 1979). McRay and Sellars are both village sites containing palisade and mounds. At the McRay Site local collector Hugh Dosset, reported finding 27 huts, three of which he excavated. They were square structures averaging 13 feet per side. Corner post were set 18 inches deep into puddled clay floors. Two mounds were present, one contained two stone cist burials. Both burials were children about 5 years old; one of them contained a carved stone effigy. Two other cemetery areas were identified from which 23 burials were recovered. None of these were cremations. Little arthritis was observed and there were no indications of violent death. Grave goods included copper, fluorospar, conch shell beads, pottery vessels and lip labret. From the midden area Dosset recovered charred beans, maize and pepper(?).

At the Sellars Site, Butler (1979) reported a large platform mound, another low, rounded mound and about 100 low, circular ridges of earth. During an early excavation, Putnam reportedly removed 60 stone box graves from the flanks of the platform mound. Seven low rock mounds located outside the fortifications probably functioned as refuse dumps. Radiocarbon dates place the site in Early to Middle Mississippian, from A.D. 950 to 1300.

The most important aspect of this site according to Butler is that its hinterland location would inhibit the resident population from participating in the Mississippian subsistence pattern as it is understood in the Mississippi and Ohio River valleys. Early pioneer environmental data also suggest that Sellars would have been located in an area densely forested with cedars interspersed with occasional clearings. Butler (1979:18) cites Clay's discussion of a Mississippian response to the environment and concludes that Sellars was probably a border settlement which "functioned as an important terminus for external trade and communication."

Less archaeological data is available for the Middle and Upper Cumberland than the lower part of the drainage. With the exception of the relatively unpublished Wolf Creek Dam data, most of the information for the drainage is derived from survey and testing projects.

In addition to the Castilian Spring Site reported by McCollough (1972) and discussed in the Middle Woodland section of this report, the Johntown Steam Plant Site also produced information relevant to this discussion. Located 11 air miles east of the Antioch Site, "It is centered on a high terrace immediately northwest of the confluence of a significant tributary, Dixon Creek, with the Cumberland River" (McCollough 1972:12). The site is situated on broad, level, low terraces and "was eminently suited for intensive 'base camp' occupation by local prehistoric groups representative of Archaic, Woodland, and Mississippian cultures" (McCollough 1972:12). Near the plant site McCollough reported the presence of the "Dixon Mound and Camp," which is located on the second terrace of Dixon Creek at its confluence with the Cumberland River. This site is dominated by the presence of a truncated Mississippian mound which was 65 x 95 feet along the base and 7 feet high. A dense village midden was observed. Reportedly, seven anthropomorphic sandstone figures have been recovered by unidentified individuals. The size of the site, the presence of substantial mounds and the appearance of such rare items as anthropomorphic figures indicates that this was a significant local Misississippian ceremonial complex. In other surveys, Ball (1979) has documented a Mississippian site (40JK37) in Jackson County, Tennessee, which contained shell tempered ceramics and a shell bearing midden about 3 feet deep. Fox (1977) reported a small Mississippian site (40JK30) only a few hundred meters south of the Hurricane Branch Site.

Ferguson (1972) and Broster (1972) each discussed amateur excavations on two Mississippian sites in the Cumberland River drainage. Ferguson (1972) uses the term "Middle Cumberland Culture" to refer to late prehistoric Mississippians specifically in the area from the confluence of Caney Fork River near Carthage in Smith County, Tennessee, to the confluence of the Cumberland and Ohio rivers. The use of the term "Middle Cumberland Culture" is a bit confusing in light of other literature because the "culture" is not restricted to the Middle Cumberland River, nor is it distinguished from the other Mississippian sites on the basis of isolatable cultural traits. Excavations of the Arnold Village Site located above the floodplain and overlooking the Little Harpeth River, produced 17 partial house patterns. No wall trenches were observed and the structures may have had prepared floors or been semi-subterranean. Most of the post molds were "large" (no dimensions given). Burials were not associated with houses. Fire basins within the houses were generally square features of molded clay. Ferguson felt that each house had a burial plot. No evidence of a single large cemetery was found. Apparently all of the burials were placed in stone boxes. Grave goods included anthropomorphic and zoomorphic ceramic vessels, shell bead necklaces and pendants made from a variety of materials. Most of the ceramics were identified as Neeley's Ferry Plain. Radiocarbon dates derived from human bones were given as A.D. 1200 and A.D. 1680. Ferguson suggests that the archaeological data does not support nearly 500 years of occupation. Because no historic artifacts were recovered, Ferguson proffered that the site was abandoned prior to 1715 when a French trading post was established for a few months in Nashville (1972:40).

Broster (1972) reported on the salvage excavations at the Ganier Site located on the Cumberland floodplain at Clee's Ferry in Nashville. This predominantly Mississippian site produced parts of four houses, 102 graves and large quantities of stone, ceramic artifacts and a few bone and shell specimens. Predominant ceramic types included Neeley's Ferry Plain, Bell Plain, and both Plain and Fabric Impressed Salt Pan wares. Human effigy water bottles and bowls were found, along with wood duck, frog and fish effigy bowls. Apparently all of the burials were of the stone box variety. An analysis of the skeletal population revealed that children (0-12 years) comprised 45.5% of the burials. According to Broster (1972:72) 80% of the infant deaths occurred between 18 months and 3 years. It was also noted that 80% of the adult females and 35% of adult males died before age 30.

It appears that houses were constructed by setting posts perpendicular to the ground in sandy soil in a square pattern. These houses were approximately 16 feet in diameter and had cane walls covered with daub. Wall trenches were not observed. Unlike the hearths at the Arnold Site, the central hearths were round. Charred seeds of bean (<u>Phaseolas vulgaris</u>) and maize were recovered. A single radiocarbon date placed the site at A.D. 1200-A.D. 1450.

In the Caney Fork area Jolley (1979) reports that Early Mississippian is characterized by mixed limestone and shell-tempered ceramics. The settlement pattern is characterized as dispersed, typified by small habitation sites. Mississippian platform mounds are found on the Collins River, a tributary of Caney Fork, at an average distance of 8 miles. Such tight spacing is observed nowhere else in the Cumberland drainage.

In an early account of a probable Mississippian site in the Middle Cumberland, Haite (1883) reported a mound and stone box grave complex at Flynn's Creek in Jackson County. The Flynn Creek valley, located about 4 miles west of the present town of Gainesboro, contained five limestone springs, one sulphur and one salt spring, making this a very attractive area prehistorically. The large town to which Haite referred contained several small and one large mound as well as a vast number of stone box graves. On a nearby hill are other burial mounds and caves. Based on Haite's description of a cremation and a large stone mound containing many individual burials, the possibility exists that this hillside cemetery may be Woodland in origin.

Approximately 50 miles upriver from Jackson County is Wolf Creek Dam and Lake Cumberland. An archaeological project was conducted in the area by William Haag and Richard S. McNeish in 1947 in order to salvage available data. As a result of initial survey work, 34 sites were identified. Several were excavated in 1949 but only one site, Rowena (15RU10) has been published. A report by Weinland (1980) indicates that Rowena had a substantial Mississippian occupation. Three mounds, a village and another midden area on a north bank terrace of the river were partially excavated. The mound contained three distinct floors, all square. Housefloor 4 contained charred cedar logs. Haag recovered other features including fire basins, many of which were rectangular storage pits, rock piles and caches. Weinland placed the site between A.D. 1300 - 1400.

As a "Mississippian" site, Rowena is something of an anomaly. There is considerable temporal differences between the ceramic and lithic collectons. Specifically, while 90% of the reported ceramics are shell tempered, only 25% of the projectiles are generally recognized as late prehistoric Madison and Ft. Ancient types. Not only do the lithics reflect a whole gamut of projectiles from Paleo-Indian through Mississippian, but there appears to be a substantial number of Middle to Late Woodland projectile points present. This data may lend support to Morse's observation, discussed earlier, that the Mississippian in the Middle to Lower Cumberland may be a watered down version of "Classic" Mississippian.

With the exception of Dorwin's (1970) work in Pineville, Bell County, Kentucky, all of the remaining work on the Cumberland has been survey in nature. Wilson and Finch

(1980) found that in the Big South Fork drainage, Mississippian sites were most frequently encountered in the "Escarpment Base Zone." With little floodplain available for aboriginal occupation, it was not surprising to find only one site in the "Riverine Floodplain Zone" and none on the "Riverine Terrace Zone." DeLorenze (1979:97-98) found late prehistoric sites in rockshelters and on the Cumberland floodplain in Bell County, Kentucky. Late prehistoric sites have been found in similar settings on the Rockcastle River (Earth Systems 1979) where occupation was found evenly distributed between rockshelters and bottom lands. Survey results in Knox County, Kentucky, (Hockensmith 1980) indicate the presence of a Mississippian village and mound complex (15KX24) and another village (15KX10) which contained two Pisgah sherds. The only documented excavation of a Mississippian site in the upper reaches of the Cumberland was given by Dorwin (1970) who reported on the salvage of a mound in Pineville, Kentucky. This mound evidenced two stages of construction. The first phase, dated by the pottery, was placed between A.D. 800 - 1200 as suggested. A second construction phase began with a burn off of existing vegetation on the primary mound. A date was not established for the second phase. At the time of excavation Dorwin reported that the mound was 3 to 4 feet high and flat topped.

Discussion of Late Prehistoric

The late prehistoric, as represented in the Cumberland River literature, is best understood in the lower portion of the drainage. There is, however, evidence for substantial sites or activities along the entire drainage. Mound sites are located in isolated settings throughout the drainage and mound clusters have been observed in the middle reaches of the river, particularly off of the main valley. Some of these latter sites appear to represent pioneer outpost which may have derived logistical support from elsewhere within the larger settlement system. A complex scenario develops as "Classic" and less than "Classic Mississippian" sites are identified in the lower and middle portion of the drainage while other Classic sites are found near the river headwaters which are furthest away from the often supposed Mississippian heartland.

Also, there appears to be considerably distinct cultural behavior in the lower portion of the drainage as evidenced by Tinsley Hill patterns in domestic structures, child burials, etc., in the Cumberland as well as surrounding drainages. Perhaps this is simply a reflection of the archaeological work conducted there; however, these sites are located in settings decidedly different than that of neighboring sites upriver. The resource base, particularly in terms of tillable soil necessary for maize agriculture, changes through space with less desirable and/or available soils located upriver.

A framework within which the complexity of the late prehistoric period may be illuminated has been offered by Clay (1976) for Mississippian settlement in western Kentucky. Rather than approaching Mississippian settlement from the view of historical developments involving the spread of a culture, Clay suggests that it may be productive to consider the principal of equifinality where "From multiple and diverse starting 'states', social groups sharing a common set of cultigens developed into similar Mississippian groups during the 600 years preceeding European contact" (1976:138).

Because people of the Mississippian era were in the process of development and adaptation, they had to make a variety of decisions about crucial environmental factors such as the soil suitability in order to carry out intensive agriculture. Clay proffers that they made at least three responses to the situation: tactical, strategic and operational. Tactical sites represent attempts to deal with the environment on a local level. They tend to be self-sufficient and require low levels of cooperation between them. Strategic sites exhibit an element of planning and stability and tend "to be located 'strategically', in areas accessible to larger networks of interregional communication, characteristically at the junctions of major rivers. In settlement patterns, strategy is reflected in levels of sites differentiated by size, complexity, and local activities" (Clay 1976:1940). "The operational site is characterized not so much by its structural features which approximate those of the strategic center, as by its fortifications and its relations with other sites. Operational sites exist side-by-side with other operational sites, all of them fortified, in situations suggesting competition for agricultural land" (Clay 1976:140).

Much of the Cumberland River data appears to fit superficially with Clay's model; however, extensive additional problem formulation, analysis and interpretation would be necessary to test this. It is sufficient to say at present that the late prehistoric people of this drainage were involved in varying degrees with Mississippian developments to the west. Whether Mississippian sites in the Cumberland truly reflect intrusions, migrations or some aspect of equifinality, or some combination of these phenomenon is not clear. Even less clear is the reason(s) for their disappearance prior to European contact.

Ongoing Unreported Research

The above overview of Cumberland Valley archaeology is far from complete. There are several documents in preparation or in press that will probably alter the above scenario. These include: Steven Fox's report on the Hartsville Nuclear Power Plants, William Antry's recent work in the Hartsville area, Patricia Criddlebaugh's dissertation on Penitentiary Branch and Nancy O'Malley's survey of the Fort Campbell Military Base.

Prior Investigations at the Hurricane Branch Site (40JK27)

Archaeological Site 40JK27 was initially identified by Butler (1975) during a reconnaissance survey. Since there had been no agricultural activities on the site for many years, Butler surveyed the 65 acre tract by digging small test holes from 30 cm to 100 cm deep at unspecified intervals, concentrating in areas where there was a good probability that sites were located. As a result, five sites (40JK27-31) were identified. Site 40JK27 produced lithic debris, daub, charcoal and limestone tempered pottery. Butler concluded that "the sherds indicate a general placement in the Woodland Period, in this case, anywhere from 300 B.C. to A.D. 900. Archaic materials may also be present" (1975:4). Butler recommended further survey of the area, testing of known sites and backhoe trenching for buried deposits in order to determine the presence or absence of sites. These recommendations were accepted by the Nashville District Corps and a second field season, under the supervision of Stephen Fox, was initiated. Fox (1977) opened three hand excavated test pits and one backhoe trench. His initial data revealed distinct stratigraphic differences between test units on the rise about 120 feet east of the river and the units near the river bank. In test unit F-2, which was near the bank, he defined four strata:

> Stratum A2: 0.0-0.7 feet. Plowzone, or primary zone of agricultural disturbance. A rich, medium-brown colored, finely textured, loosely compacted matrix of alluvial sands and silts.
>
> Stratum B2: 0.7-1.4 feet. Black, alluvially deposited coal silt mixed with medium-brown colored, fine-textured sand. Small fragments of charcoal and pieces of sandstone and limestone, many of which appear to have been burned, are rather abundant throughout this stratum. Also, small amounts of burned earth and unfired wads of

clay are present.

Stratum C2: 1.4-3.5 feet. Variable light-to-medium brown colored soil of fine-textured alluvial silt and clay mixture. This stratum is considerably denser and more compacted than the overlying soil strata.

Stratum D2: 3.5-4.0 feet. Pale, light-brown, finely textured, heavily compacted matrix. The water table was encountered within this stratum (Fox 1977:16-17).

Approximately 1.5 feet below the existing ground surface, cultural materials including charcoal, burned limestone and sandstone along with two nonutilized flakes were encountered.

On the rise in the center of the site, Fox reported five soil strata:

Stratum A3: 0.0-0.75 feet. Plowzone. A fine-textured, medium-to-dark brown colored, loosely compacted matrix of alluvial sands and silts.

Stratum B3: 0.75-1.5 feet. Dark brown colored, sandy loam-like soil of fine texture. This unit is somewhat loosely compacted; however, it is denser than the overlying plowzone.

Stratum C3: 1.1-2.2 feet. Reddish-yellow colored, clay-like soil in two segments within Stratum D3. Stratum B3 extends downward between these segments. The friable nature of this matrix is suggestive of burned earth.

Stratum D3: 1.5-2.1 feet. Yellowish-brown mottled deposit of densely compacted, fine sand and clay mix. The thickness of this unit is highly variable.

Stratum E3: 2.1-3.0 feet. Reddish colored clay with orange mottling that is highly compacted. Water table is present in this stratum. (Fox 1977:19)

According to Fox, all but Stratum C3 were culture bearing deposits.

In terms of artifacts, Fox reported the recovery of 1,200 specimens of which 93.9% were lithic and 4.1% were ceramic. The remainder of the collection consisted of charcoal, burned earth and bone fragments. Among the diagnostic lithics recovered were a Coosa (Woodland) and a Motley (Late

Archaic/Early Woodland) projectile point. Ceramic sherds in this collection were assigned to the Woodland as described throughout the Tennessee region. Concerning the relative importance of the site, Fox (1977:30) concluded:

> Site 40JK27 is, potentially, a very important source of information concerning aboriginal cultural patterning within the Cumberland River drainage system, as much of the adaptive-developmental sequence of local Woodland cultures appears to be present. Although the sampling of this locus was extremely limited with respect to its overall horizontal and vertical dimensions, the quantity of artifactual data collected suggests that site residents engaged in, if not long-term, at least intense, seasonal occupational interaction with the various local microenvironments. These considerations in addition to the current void in knowledge of the prehistory of both the Cumberland River system and the broader central Southeastern region indicate a need for additional archaeological investigations at 40JK27.

Later work by Olinger (n.d.) included the excavation of 16 backhoe trenches which were designed to better define the vertical and horizontal parameters of the site. Discrete soil horizons varied considerably, with a minimum of three and a maximum of seven being identified. Although none of the trenched soil was screened, Olinger recorded charcoal in eight trenches and lithic debris in three. Unfortunately, a master map indicating the placement of these units was not available. Description and analysis of soil types from excavated areas across the site show a high potential for preservation of vegetal material, a point worth noting in light of the research goals of the current project at the Hurricane Branch Site.

The present work resulted from efforts to nominate this site to the National Register of Historic Places. Data accumulated by Butler, Fox and Olinger provided the necessary documentation for nomination to the National Register of Historic Places and for the formulation of an initial research design which is presented in Appendix B.

CHAPTER IV

ECOLOGICAL SETTING AND COMPARATIVE DATA SETS

by
Thomas W. Gatus

Introduction

The purpose of this chapter is threefold. First, to outline a methodological research design for use of past and present flora and faunal data in an attempt to reconstruct the paleo-ecological setting of the immediate environs of the Hurricane Branch Site. Contemporary ecological data derived from various scientific reports on the area of study will be coupled with historical sources and ecofactual material from the Hurricane Branch Site to provide a comparative base for prehistoric environmental and economic reconstruction and interpretation. Second, to schematically organize the contemporary data on floral and faunal communities in such a way that it can be utilized later to outline broad environmental zones within the physiographic setting of the Hurricane Branch Site. And third, to present some general techno-environmental and economic considerations which are relevant to understanding any prehistoric man-land use relationships.

The primary concern here is to establish a schematic idea of the types of floral and faunal communities that once flourished in the region. From these data generalizations on such human economic behaviors as "scheduling," "seasonality," labor organization and technology can be extrapolated for use in the later interpretative chapters of this report.

Before proceeding further it is necessary to specify that the contemporary ecological information contained within this chapter is drawn from numerous references, including generalized studies for the Eastern United States as well as studies specifically concerned with more localized areas in the Cumberland Valley. Very little environmental research has been done in Jackson County, Tennessee; however, from a subjective standpoint the ecological setting of the area is sufficiently similar to other local areas which have been studied in better detail.

Conceptual Scheme

In order to accommodate a divergent body of ecological information, the contemporary data on resources in this chapter has been organized by major physiographic zones, ecozones and micro-environments. The major physiographic zones in and near the project area include the Nashville Basin, the Eastern Highland Rim (and the more general Mississippian Plateau) and the Cumberland Plateau (Figure I-1). They are defined by their topographic, geologic and biotic homogeneity. Within each of these larger zones exist middle level ecozones consisting of lowlands, slopes and uplands. Like the physiographic zones, ecozones are relatively homogenous internally, but may differ dramatically from one physiographic zone to the next. Ecozones, in turn, are composed of yet smaller microenvironments consisting of river banks, terraces, sloughs, slopes, bluffs, etc. Even these environments could be further subdivided.

The dynamic nature of these different zonal levels is maintained by the interaction of the various constituents, some of which are exclusive to specific zones, while others crosscut them. Climate, for example, crosscuts all of the physiographic zones, ecozones and microenvironments in north-central Tennessee. It may, however, have a varied impact on each of them. Some floral and faunal communities may also crosscut various zones but others are exclusive to specific ones. Once the components, as well as the dynamics, of each ecological zone are brought into focus, then questions concerning the man-land use relationship can be intelligently formulated and addressed.

For purposes of convenience the contemporary environmental data will be discussed first on a local level and then on a broader regional physiographic level. The latter is further divided into upland and lowland areas.

Local Data Base

As stated above, the data contained in this section was drawn from a wide range of sources. Few of these sources, however, directly address the environmental setting of the project area or even Jackson County, Tennessee. Most of the data has been drawn from recent environmental studies of the Rockcastle and Big South Fork tributaries of the Cumberland River (Figure I-1). Since this information was collected in the latter part of the twentieth century, it is not particularly amenable to paleo-environmental reconstruction in its present state. Therefore, it is not feasible at this time to address the total variety of flora and fauna that previously occupied the various ecological zones or the ecosystemic interaction among various species.

Climate

The State of Tennessee, according to Ward (1925), lies within the Eastern Climatic Province, but it also exhibits characteristics of the Gulf Climatic Province. In regard to the rainfall Ward (1925) stated that

> There is a single maximum in late winter or early spring (March) and a well-marked minimum in mid-autumn (October) when the general storm control is relatively inactive . . . The warm and damp southerly winds of the cyclonic storms of late winter and spring which cross this area on their way north from Texas or the Gulf are responsible for the heavy rainfall of the Tennessee maximum . . . These late winter and early spring rains not infrequently cause floods in the rivers of this region.

According to the records of the National Climate Center, Cookeville, Tennessee (which is approximately 15 miles from Gainesboro) experiences an average annual temperature for 1980 of 56.6° F. with average monthly temperatures ranging from 32.5° F. in February to 78.6° F. in July. Average yearly precipitation for 1980 was 46.28 inches with February receiving the least at 1.28 inches and March receiving the most at 9.53 inches. The last day of freezing temperatures was April 17 and the first day of fall with a freezing temperature was September 6, providing approximately 183 days of frost-free temperatures. (U.S. Department of Commerce 1980). West of Jackson County in the Mid-Cumberland Development District, seasonal temperatures fluctuated from 112° F. to 21° F. during the period of 1951 to 1960. This same area has an average annual snowfall of 6 inches (Mid-Cumberland Council of Governments and Development District 1974).

It was briefly mentioned above that climate crosscuts various ecological zones and has a diverse impact on them. Upland environments, for example, may receive the same amount of rainfall or snow as lowlands but the latter may flood due to runoff. Concomitantly, soil brought into solution in the uplands during rains are eventually depleted, producing a negative net effect while deposition of the same soils in stream and river valleys produce a positive net effect. In both instances environmental zones have been altered. The impact on resident human populations probably also varied since some resources may have been destroyed while others were altered or newly created.

Present-day floral and faunal communities have not been studied on a local level. Thus, reference to these environmental constituents must depend on the regional physiographic data.

Physiographic Zonal Resources

Flora

Since the project area is at the edge of the Nashville Basin and near the Eastern Highland Rim, it is pertinent to note that prehistoric populations would, hypothetically, have had access to the potential resources of both zones. Both the Nashville Basin and the Eastern Highland Rim are within the Western Mesophytic Forest Region (Braun 1950). This area, immediately west of the Cumberland and Allegheny plateaus, is considered a transitional region. It differs from the Mixed Mesophytic Forest Region in that a single climax type is not dominant.

In the Nashville Basin cedar glades are the most distinctive forest feature. They consist of "open to dense stands of red cedar (*Juniperus virginiana*), which occupy the flats on the Lebanon limestone. Scattered deciduous trees (*Quercus stellata*, *Quercus muehlenbergii*, *Carya ovata*, *Cercis canadensis*, *Bumelia lycioides* and *Ulmus alata*) among the cedars and shrubs (*Forestiera ligustrina*, *Rhus aromatica* and *Rhomnus caroliniana*) do not greatly modify the aspect given by the dominant cedars" (Braun 1950:131). In the spring, open areas in the cedar glades support a variety of wildflowers but in the summer, when the glades are dry, xerophytes such as prickly pear (*Opuntia*) become more conspicuous.

In addition to the cedar glades, Braun states that "Other 'glades', known as 'hardwood glades' occur on outcrops of more massive limestones (Galloway 1919). On lower rocky hills and in hardwood glades, oaks (white and bristle-top species), hickory, winged elm, hackberry and blue ash form open stands" (Braun 1950:132).

Braun's Dissected Eastern Highland Rim area, located east of the project area, differs little from the overall mixed mesophytic forest, with the exception of the abundance of Mountain spurge (Pachysandra procumbens). Hemlock is abundant in this area and beech is the dominant tree (1950:152). The Mississippian Plateau, which falls within the mixed mesophytic forest, also supported a diverse but similar forest.

In addition to the forest resources within these large zones, other plants, particularly herbaceous species, were also available for prehistoric utilization. Shelford (1963), for example, noted the following herbs associated with the tulip-oak forest in the Big South Fork area (Figure I-1): "prairie-tea, sunflower, mandrake, everlasting, false aloe, horsemint, shooting star, toothwart, iperas, violet wood-sorrel, flowering spurge, bloodroot, wild ginger, squirrel-corn, violets, false Soloman's seed, jewel-weed, and cinquefoil." These are but a few of the thousands of plants which grow in most of the major physiographic zones of the Eastern United States. Yanovsky (1936) compiled a list containing hundreds of plants which were known to have been used by historic Indian groups. Although these plants could not be readily placed in specific ecological zones for this study, a cursory review of his data reveals over 130 plants that were commonly used as foods and pharmaceuticals from the state of New York to the Deep South.

Fauna

The Eastern Woodlands generally support a diverse faunal community. Many species of mammals, birds, fish, reptiles, amphibians and insects are common throughout the major physiographic zones. Most of these species were probably present prehistorically as well as those no longer extant in the area, such as elk, black bear, coyote, wolf, mountain lion, bison and turkey. As shown by the archaeological record, many of the latter were known to have served as regular food resources; many others probably were exploited in times of nutritional stress.

A list of extant mammals and birds which may have been identified as food or other types of economic resources in the Roaring River area but which are common to both the Nashville Basin and the Eastern Highland Rim, is presented in Table IV-1. In addition to the species presented in Table IV-1, there are at least another 117 species of birds and 12 species of bats available as well (Tennessee Department of Commerce 1974). Various common turtles and snakes are found in both the Nashville Basin and the Eastern Highland Rim. These are listed in Table IV-2. Considering few species have been identified and that specific habitat data was not available, they have been included in this section of the chapter for referential purposes.

Table IV-1. Extant Mammals and Birds of the Area.

MAMMALS	
White-tailed deer	Odocoileus virginianus
Racoon	Procyon lotor
Virginia opossum	Didelphis virginiana
Gray squirrel	Sciurus carolinensis
Fox squirrel	Sciurus niger
Eastern cottontail rabbit	Sylvilagus floridanus
Gray fox	Urocyon cinereoargenteus
Red fox	Vulpes vulpes
Groundhog	Marmota monax
Mink	Mustela vison
Muskrat	Ondatra zibethcus
Bobcat	Lynx rufus
Long-tailed weasel	Mustela frenata
Striped skunk	Mephitis mephitis
Southern Flying squirrel	Glaucomys volans
Eastern chipmunk	Tamias striatus
Hispid cotton rat	Sigmodon hispidus
Deer mouse	Peromyscus maniculatus
Meadow jumping mouse	Zapus hudsonius
Eastern mole	Scalopus aquaticus
Pine mole	Pitymys pinetorum
Marsh rice rat	Oryzomys palustris
Eastern woodrat	Neotoma floridana
Golden mouse	Ochrotomys nuttalli
Cotton mouse	Peromyscus gossypinus
White-footed mouse	Peromyscus leucopus
Eastern harvest mouse	Reithrodontomys humulis
Southeastern shrew	Sorex longirostris
Least shrew	Cryptotis parva
Short-tailed shrew	Blarina brevicauda

BIRDS	
Golden Eagle	Aquita chrysaetos canadensis
Bald Eagle	Haliaeetus leucocephalus
Mallard	Anas p. platyrhynchos
Wood duck	Aix sponsa
Bobwhite quail	Colinus virginianus
American woodcock	Philohela minor
Mourning dove	Zenaidura macroura
Common crow	Corvus brachyrhychos
Ruffed grouse	Bonasa umbellus
Great blue heron	Ardea herodias
Green heron	Butorides v. virescens
Turkey vulture	Cathartes aura
Black vulture	Coragyps atratus

Hawks	
Sharp-shinned	Accipiter striatus velox
Cooper's	Accipiter cooperii
Red-tailed	Buteo jamaicensis
Red-shouldered	Buteo lineatus
Broad-winged	Buteo p. platypterus
Osprey	Pandion Haliaetus carolinensis
Owls	
Barn	Tyto alba partincola
Screech	Otus asio
Great horned	Bubo virginianus
Barred	Strix varia

Table IV-2. Extant Turtles and Snakes of the Area (after Earth Systems 1979).

TURTLES	
Common Snapping Turtle	Chelydra serpentinia
Midland Painted Turtle	Chrysemys sicta marginata
Map Turtle	Graptemys geographica
Eastern Box Turtle	Terrapene carolina
Common Musk Turtle	Sternotherus odoratus
Midland Smooth Softshell	Trionyx muticus
Eastern Spring Softshell	Trionyx spiniferus
SNAKES	
Eastern Worm Snake	Carphophis a. amoenus
Midwest Worm Snake	Carphophis amoenus helenae
Northern Scarlet Snake	Cemophora coccinea copei
Northern Black Racer	Coluber constrictor
Northern Ringneck Snake	Diadophis punctatus edwardsi
Black Rat Snake	Elaphe obsoleta
Black Kingsnake	Lampropeltis getulus niger
Eastern Milk Snake	L. t. triangulum
Scarlet Kingsnake	L. t. elapsoides
Rough Green Snake	Opheodrys aestivus
Northern Pine Snake	Pituophis melanoleucus
Northern Water Snake	Natrix sipedon
Northern Brown Snake	Storeria dekayi
Northern Red-bellied Snake	S. o. occipitomaculata
Eastern Ribbon Snake	Thamnophis sauritus
Eastern Garter Snake	T. s. sirtalis
Eastern Smooth Earth Snake	Virginia valeriae
Eastern Hognose Snake	Heterodon platyrhinos
Northern Copperhead	Agkistrodon contortrix mokeson
Timber Rattlesnake	Crotalus horridus

Ecozonal Resources

Flora

A recent study of the upland portion (i.e., ridge-tops and hill slopes) of the Roaring River which enters the Cumberland River near Gainesboro, Tennessee, noted that the "principal tree species in the area include northern red oak, chestnut oak, southern red oak, white oak, post oak, mockernut hickory, pignut hickory, eastern red cedar, shortleaf pine, Virginia pine, yellow poplar and black locust" (Tennessee Department of Conservation 1974:22).

During work on a 6,500 acre tract of uplands and slopes in Pickett County, Tennessee (about 30 air miles upriver from the project area), Braun (1950:102) stated that "white oak, chestnut, and chestnut oak were most abundant, with red oak, black oak, tulip tree, cucumber tree, sour gum and occasional yellow pine (*Pinus echinata*)." She also noted that, "The canopy species of this slope forest were tuliptree, hemlock, basswood, walnut, cucumber tree, sugar maple, red maple, chestnut, chestnut oak, sour gum, shellbark hickory, bitternut hickory, buckeye, and white oak, of which the first two were most numerous" (Braun 1950:104). The undergrowth contained papaw, dogwood, sweet birch, great-leaf magnolia, umbrella magnolia and American holly.

Fauna

In addition to the species which readily crosscut most of the ecological zones discussed above, there are some that have been observed in lowland and riverine environments. An environmental survey of the Rockcastle River by Earth Systems (1979) revealed the presence of the southern flying squirrel (*Glaucomys volans*), beaver (*Castor canadensis*), river otter (*Lontra canadensis*), striped skunk (*Mephitis mephitis*), and eastern spotted skunk (*Spilogale putorius*).

Lowland Resources

Flora

At present there is little available data on forest communities within the valley bottom lands and floodplains. Similarly, the types and distribution of various herbaceous plants in and around the project area is poorly documented; however, Earth Systems (1979) conducted a detailed floral inventory of the nearby Rockcastle River (Figure I-1) and its environs. Data presented in Table IV-3 lists the floral species found in floodplains, terraces, sloughs and sand and silt banks.

Fauna

Amphibious species identified in the Rockcastle River area (Earth Systems 1979) include 10 species of frogs, 19 species of salamanders and three species of toads. The latter appear to grow quite large in the project area. Thirty-six species of fish were also collected (Earth Systems 1979). Many were various species of darters, chubs and minnows but larger fish such as rock bass (*Ambloplites rupestris*), small mouth bass (*Micropterus dolomieui*), suckers (*Moxostoma duquesni*), longear sunfish (*lepomis megalotis*), and channel catfish (*Ictalurus punctatus*) were also present.

Data collected prior to the Earth Systems survey of the Rockcastle indicated that two species of snail and nine species of crayfish inhabit this area; however, Earth Systems (1979) was only able to verify the presence of two of the crayfish species. Twenty-four species of mollusks have also been identified in the Rockcastle River Area (Neal and Allen 1964).

Plant Utilization by Aboriginal Groups

Ethnographic sources indicate that aboriginal peoples were intimately acquainted with the natural environment in which they lived. Numerous plant species were exploited for a wide variety of uses. Yarnell (1964:44), for instance, states that approximately 373 plants native to the Upper Great Lakes Region were known to have been utilized by Indians. Yanovsky (1936) lists over 130 plants that are referable to the Eastern United States. A number of other researchers, including Swanton (1979), Whitford (1941), Alford (1936), Hudson (1976), Gilmore (1977), Medsger (1939) and Angier (1978), provide additional information on edible species, documented uses and exploiting/processing technologies. A partial listing of ethnographically or archaeologically documented plants, their common habitats and uses has been compiled in Appendix G. As cautionary notes, the reader should be aware that data has been drawn from sources covering a wide geographic range, all of which may not be specifically relevant to Tennessee. In addition, not all potentially re-usable plants are listed, nor are all potential uses included for the plants listed. An attempt has been made to limit habitat information to the most common suitable environments. As any botanist can attest, plants with very broad habitat requirements may grow in many different environments. Finally, seasonality is not treated here because it is so highly variable depending on geographic latitude, land drainage, and elevation. Seasonality is discussed in Chapter VI under the section on botanical remains. However, in the absence of long-term, intensive ethnobotanical studies in this area of Tennessee, we have chosen to present only generalized information to provide a backdrop for more site-specific discussions of the archaeological data in subsequent sections.

A similar table could have been compiled for exploited faunal species, as ethnographic literature contains many references to the use of animals. We have chosen not to compile such a table because so few faunal specimens were recovered from the site.

Table IV-3. Potential Flora of the Alluvial Environs (modified from Earth Systems 1979).

Common Name	Scientific Name	Form
Monkshood	Aconitum uncinatum	H
Dolls-eyes	Actaea pachypoda	H
Northern Maidenhair Fern	Adiantum pedatum	F
Harvest Lice	Agrimonia parviflora	H
Wild Onion	Allium canadense	H
Hazel Alder	Alnus serrulata	S
Giant Ragweed	Ambrosia trifida	H
Rue Anenome	Anemonella thalictroides	H
Crossvine	Anisostichus capreolata	V
Groundnut	Apios sp.	H
Spikenard	Aralia racemosa	H
Devils-Walking stick	A. Spinosa	S
Green Dragon	Arisaema dracontium	H
Jack-in-the-pulpit	A. triphyllum var. triphyllum	H
Goatsbeard	Aruncus dioicus	H
Cane	Arundinaria gigantea	G
Wild Ginger	Asarum canadense	H
Poke Milkweed	Asclepias exaltata	H
Pawpaw	Asimina triloba	S
White Wood Aster	Aster divaricatus	H
Southern Lady Fern	Athyrium asplenioides	F
Glade Fern	A. pycnocarpon	F
Silvery Glade Fern	A. thelypterioides	F
Sweet Birch	Betula lenta	T
Rattlesnake Fern	Botrychium virginianum	F
Pale Indian-plantain	Cacalia atriplicifolia	H
Trumpet Creeper	Campsis radicans	V
Bittercress	Cardamine rotundifolia	H
Bittersweet	Celastrus scandens	V
Buttonbush	Cephalanthus occidentalis	S

S = Shrub F = Fern
V = Vine G = Grass
H = Herb P = Parasite

Table IV-3. Continued.

Common Name	Scientific Name	Form
Turtlehead	Chelone glabra	H
Bugbane	Cimicifuga americana	H
Enchanter's Nightshade	Circaea lutetiana ssp. canadensis	H
Horsebalm	Collinsonia canadensis	S
Eared Coreopsis	Coreopsis auriculata	H
Pagoda Dogwood	Cornus alternifolia	S
Hazelnut	Corylus americana	S
Honewort	Cryptotaenia canadensis	H
Yellow Lady's Slipper	Crypripedium calceolus var. pubescens	H
Undescribed Lady's Slipper	C. sp. Nov.	H
Larkspur	Delphinium tricorne	H
Cutleaf Toothwort	Dentaria multifida	H
Cutleaf Toothwort	D. multifida	H
Roundleaf Beggar's Ticks	Desmodium rotundifolium	H
Wild Yamroot	Dioscorea villosa var. villosa	H
Leatherwood	Dirca palustris	S
Green Mandarin	Disporum lanuginosum	H
Goldies Fern	Dryopteris goldiana	F
Marginal Woodfern	D. marginalis	F
Intermediate Woodfern	D. intermedia	F
Beechdrops	Epifagus virginiana	P
Strawberry Bush	Euonymus americanus	S
Eastern Burningbush	E. atropurpureus	S
White Snakeroot	Eupatorium rugosum	H
Wild Geranium	Geranium maculatum	H
Ground Mint	Glecoma hederacea	H
Spiny-pod	Gonolobus obliquus	H
Southern Witch Hazel	Hamamelis virginiana	S
Sunflower	Helianthus sp.	H
Green Violet	Hybanthus concolor	H

S = Shrub F = Fern
V = Vine G = Grass
H = Herb P = Parasite

Table IV-3. Continued.

Common Name	Scientific Name	Form
Wild Hydrangea	Hydrangea arborescens	S
Waterleaf	Hydrophyllum canadense	H
Common St. John's Wort	Hypericum perforatum	H
Shrubby St. John's Wort	H. prolificum	S
Plumleaf Winterberry	Ilex verticillata var. padifolia	S
Spotted Jewelweed	Impatiens biflora	H
Crested Dwarf Iris	Iris cristata	H
Virginia Willow	Itea virginica	S
Mountain Laurel	Kalmia latifolia	S
Wood Nettle	Laportea canadensis	H
Lily-leaved Twayblade	Liparis lilifolia	H
Cardinal Flower	Lobelia cardinalis	H
Blue Lobelia	Lobelia puberula	H
Japanese Honeysuckle	Lonicera japonica	V
Bugleweed	Lycopus sp.	H
Loosestrife	Lysimachia ciliata	H
Umbrella Tree	Magnolia tripetala	T
Meehania	Meehania cordata	H
Moonseed	Menispermum canadense	V
Virginia Bluebell	Mertensia virginica	H
Microstgium	Microstegium virmineum	G
Partridge Berry	Mitchella repens	H
Sensitive Fern	Onoclea sensibilis	F
Broomrape	Orobanche uniflora	P
Cinnamon Fern	Osmunda cinnamomea	F
Interrupted Fern	O. claytoniana	F
Royal Fern	O. regalis var. spectabilis	F
Giant Woodsorrel	Oxalis grandis	H
Allegheny Spurge	Pachysandra procumbens	H
Virginia Creeper	Parthenocissus quinquefolia	V

S = Shrub   F = Fern
V = Vine   G = Grass
H = Herb   P = Parasite

Table IV-3. Continued.

Common Name	Scientific Name	Form
Blue Phlox	Phlox divaricata	H
Clearweed	Pilea pumila	H
Mayapple	Podophyllum peltatum	H
Jacob's Ladder	Polemonium reptans	H
Christmas Fern	Polystichum acrostichoides	F
Rattlesnake Root	Prenanthes sp.	H
Buffalo-nut	Pyrularia pubera	S
Common Buttercup	Ranunculus abortivus	H
Rosebay	Rhododendron maximum	S
Poison Ivy	R. radicans	V
Wild Rose	Rosa carolina	S
Goldenglow	Rudbeckia laciniata	H
Lyre-leaved Sage	Salvia lyrata	H
Elderberry	Sambucus canadensis	S
Bloodroot	Sanguinaria canadensis	H
Lizard's Tail	Saururus cernuus	H
Showy Skullcap	Scutellaria serrata	H
Groundsel	Senecio sp.	H
Starry Campion	Silene stellata	H
Blue-eyed Grass	Sisyrinchium sp.	H
Solomon's Plume	Smilacina racemosa	H
Catbrier	Smilax bona-nox	V
Carrion-flower	S. ecirrhata	H
Sawbrier	S. glauca	V
Common Greenbrier	S. rotundifolia	V
Zig Zag Goldenrod	Solidago flexicaulis	H
Bladdernut	Staphylea trifolia	S
Giant Chickweed	Stellaria pubera	H
Mountain Camellia	Stewartia ovata	S
Celandine Poppy	Stylophorum diphyllum	H

S = Shrub F = Fern
V = Vine G = Grass
H = Herb P = Parasite

Table IV-3. Continued.

Common Name	Scientific Name	Form
Coralberry	Symphoricarpos orbiculatus	S
New York Fern	Thelypteris noveboracensis	F
Foamflower	Tiarella cordifolia	H
Tovara	Tovara virginiana	H
Zigzag Spiderwort	Tradescantia subaspera	H
Trautvetteria	Trautvetteria carolinensis	H
Little Sweet Betsy	Trillium cuneatum	H
Erect Trillium	T. erectum	H
Wood Merrybells	Uvularia perfoliata	H
Little Merrybells	U. sessilifolia	H
Valerian	Valeriana pauciflora	H
Mapleleaf Viburnum	Viburnum acerifolium	S
Plum-leaved Viburnum	V. prunifolium	S
Canada Violet	Viola canadensis	H
Spear-leaved Violet	V. hastata	H
Butterfly Violet	V. papilionacea	H
Striped Violet	V. striata	H
Muscadine Grape	Vitis rotundifolia	V
Yellowroot	Xanthorhiza simplicissima	S
Golden Alexander	Zizia trifoliata	H

S = Shrub F = Fern
V = Vine G = Grass
H = Herb P = Parasite

CHAPTER V

STRATIGRAPHY AND GEOLOGIC HISTORY

by

Jimmy A. Railey
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Introduction

In order to attain a more complete understanding of the nature of prehistoric occupations at the Hurricane Branch Site, an assessment of the geologic environment was deemed necessary. The geologic environment of the site will be dealt with on two levels of abstraction: the regional level and the local or site specific level. This chapter will present the broad regional geology which deals with the lithified strata (bedrock), the aboriginal resources contained within them, and the depositional history and the geomorphologic development of the region. A description of the horizontal and vertical variability within the alluvial deposits at the Hurricane Branch Site, along with interpretations concerning the fluvial and pedologic history of the site will also be presented.

Regional Geologic Setting

Physiographic Environment

The Hurricane Branch Site lies within the northern portion of the Eastern Highland Rim section of the Interior Low Plateaus Physiographic Province (Figure V-1). Generally speaking, the Eastern Highland Rim consists of a "karst and rolling upland surface underlain by Mississippian limestones" (Fenneman 1865).

The Eastern Highland Rim reaches elevations of 1000 to 1300 feet above sea level, and rises generally 300-400 feet above the Nashville Basin to the west. To the east, the Cumberland Plateau in turn rises 700 feet or so above the general level of the Eastern Highland Rim.

Most of the Eastern Highland Rim is within the middle portions of the Cumberland River drainage. The channel of the Cumberland River is about 500 feet lower than the

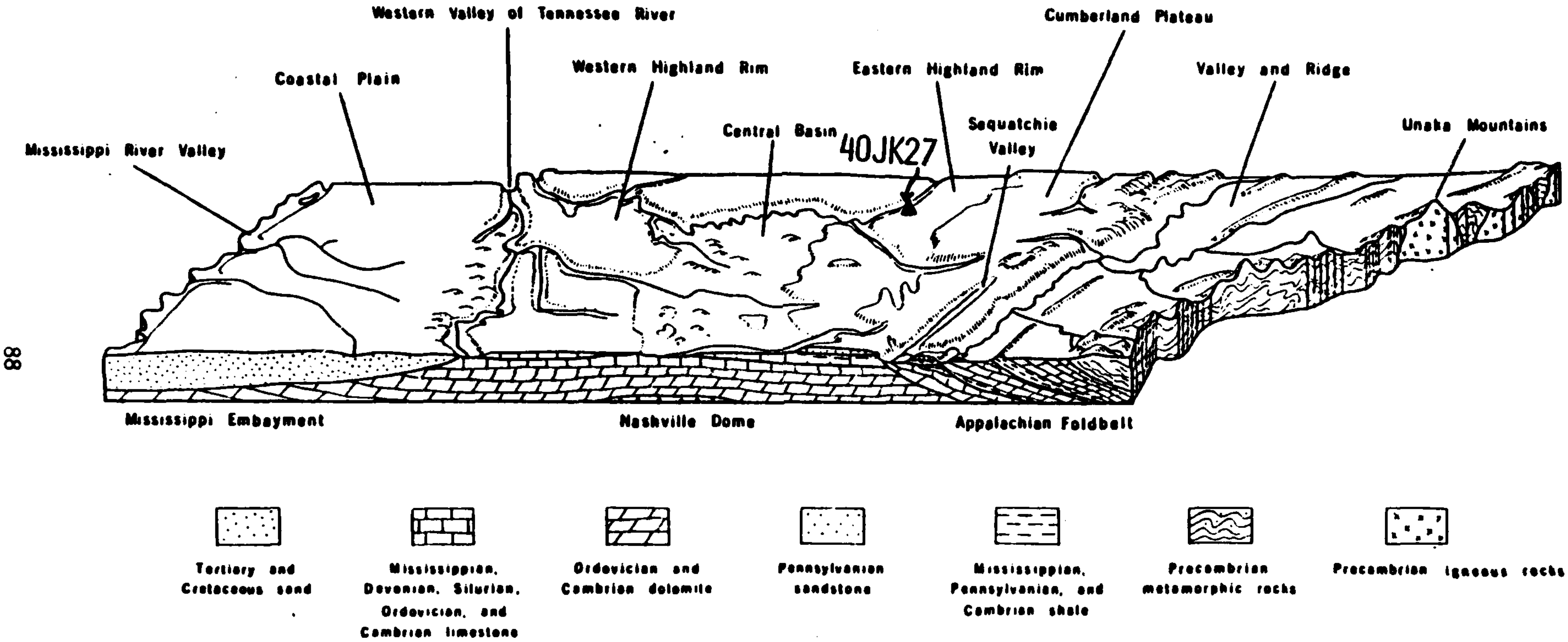


Figure V-1. Geologic Structures and Physiography of Tennessee. (From Miller 1974:11).

general plateau surface, a result of previous downcutting by this stream. This has produced a 20 to 40 mile wide swath of maturely dissected terrain through the northern portion of the Eastern Highland Rim. Ordovician rocks, more characteristic of the Nashville Basin, are exposed immediately adjacent to the middle Cumberland and the lower portions of its major tributaries.

The Cumberland River flows within entrenched meanders, and thus possesses a somewhat restricted flood basin, ranging from 1500 to 3000 feet in width. This floodplain exhibits low, linear ridges, shallow swales, backwater sloughs, and natural levees. Sharp ridges rise abruptly to over 400 feet above the general level of the flood basin.

Lithology and Stratigraphy

The bedrock exposed in Jackson County and vicinity consists exclusively of continental platform sedimentary deposits of Paleozoic age. These strata exhibit a general eastward dip off the Nashville Dome to the west (Lusk 1935). The dip angle of these strata is extremely low; however, and they appear essentially flat-lying in outcrops unless deformed by local structural processes.

Occurring immediately adjacent to the Cumberland River flood basin and comprising the greater portion of the adjoining ridges near the Hurricane Branch Site, is the Cathys-Leipers Formation of Ordovician age (Lusk 1935; Haskins and Hostetter n.d.; Wilson and Marcher 1968). The exposed portions of this formation in Jackson County consist primarily of thin to medium irregularly bedded and cross-bedded calcarenite and calcirudite fossiliferous limestones. Lesser amounts of calcareous shale appear as partings, or as minor strata (Lusk 1935). Well-developed jointing and faulting, flow rolls, and a bentonite layer were observed in roadcuts along the Cumberland and Roaring rivers.

Overlying the Cathys-Leipers Formation in this area is the Chattanooga Shale of Late Devonian/Early Mississippian age. This fissile shale is generally less than 50 feet thick, highly calcareous, and contains a persistant sand layer at its base which exhibits a disconformable contact with the underlying Ordovician rocks (Lusk 1935; Haskins and Hostetter n.d.; Wilson and Marcher 1968).

The presence of extractable petroleum in the Chattanooga shale gives this geologic unit some degree of economic value to present-day society (Lusk 1935). This oil shale may also also have been utilized by aboriginal inhabitants of this area due to its combustible properties.

Conformably overlying the Chattanooga Shale is the Fort Payne Formation, which caps the ridge-tops of Jackson County, and forms much of the plateau surface of the Eastern Highland Rim. This formation, deposited during early Mississippian times, is composed of medium to thick bedded argillaceous limestones and calcareous siltstones, with basal shaly sediments occurring in places. The Fort Payne Formation contains nodules of dense chert which is of aboriginal economic significance. In most places this formation weathers to a soil containing blocks or irregular fragments of porous chert (Lusk 1935; Haskins and Hostetter n.d.; Wilson and Marcher 1968).

Sporadically occurring on restricted erosional terrace remnants above the Cumberland River are gravel deposits. These gravels are indicative of ephemeral periods of relative hydrological stability in the downcutting process of the Cumberland River which occurred during Tertiary times (Lusk 1935). The narrow valley floor of the Cumberland River is blanketed with deposits of Quaternary alluvium composed of mixed clays, silts and sands.

Landscape Development

The Ordovician limestones and shales, which occur in outcrops adjacent to the central Cumberland River and its larger tributaries, were deposited on the floor of a warm, shallow, inland sea which extended northward from what is now the Gulf of Mexico. A relatively high energy depositional environment is indicated by the predominately calcarenite limestones which contain whole and broken fossils.

Eventual regression of this epeiric sea led to atmospheric exposure of these Ordovician sediments sometime during the Silurian and/or Devonian periods. Some karst development was initiated during this time as evidenced by solution features observable at the disconformable boundary of the Catheys-Leipers Formation and the Chattanooga shale (Lusk 1935).

Subsequent transgression of the continental sea commenced during terminal Devonian times and is marked by a thin but persistant sand layer (Lusk 1935). Following deposition of this sand layer, an extremely low energy reducing depositional environment came to prevail, and the black, muddy sediments characteristic of the Chattanooga Shale were deposited. The black shale in this portion of Tennessee reflects sedimentation that was on the periphery of a miogeosynclinal depositional environment. Thicker deposits of the Chattanooga Shale were laid down in this geosyncline which occurred in what is now the southern Appalachian area.

Subsequent to the deposition of the Chattanooga Shale, and still during Early Mississippian times, the calcareous deposits of the Fort Payne Formation were laid down. This episode was followed by others involving later Mississippian and Pennsylvanian deposits which have since been erosionally removed from the Jackson County area in part due to uplifting of the Nashville Dome.

During early Tertiary times, the ancestral Cumberland River became established, flowing in well-developed meanders on a broad erosional plain (Lusk 1935). Following general rejuvenation of this plain (which eventually formed the Highland Rim Plateau), the meandering Cumberland River became entrenched through active downcutting, a process that was slowed enough at times to permit deposition of gravels in the developing channel valley (Lusk 1935). This downcutting eventually led to the maturely dissected topography of Jackson County and nearby areas.

Sometime during Late Tertiary or Early Quaternary times, the Cumberland River ceased downcutting and began re-filling its narrow valley with mixed clays, silts and sands. This alluvial process continued until the twentieth century, when damming of the Cumberland upset the natural dynamic equilibrium evolved by this stream over millions of years.

Site Geology

Field Methodology

Twenty-two backhoe trenches were excavated at the Hurricane Branch Site. The locations of 17 of these are shown in Figure V-2. The other five trenches were neither profiled nor mapped in relation to the grid system established at the site. Four of the five (Trenches IX, XII, XVI, and XVII) were located adjacent to the river bank, and were excavated to depths which precluded close inspection of their profiles due to safety hazards. Another trench (number XVIII) became filled with water before it could be systematically examined.

The south wall of each trench was profiled and described. In order to designate the layers observed within these profiles, the geologic concept of "zone" was utilized, which is defined as any "regular or irregular...layer...of earth

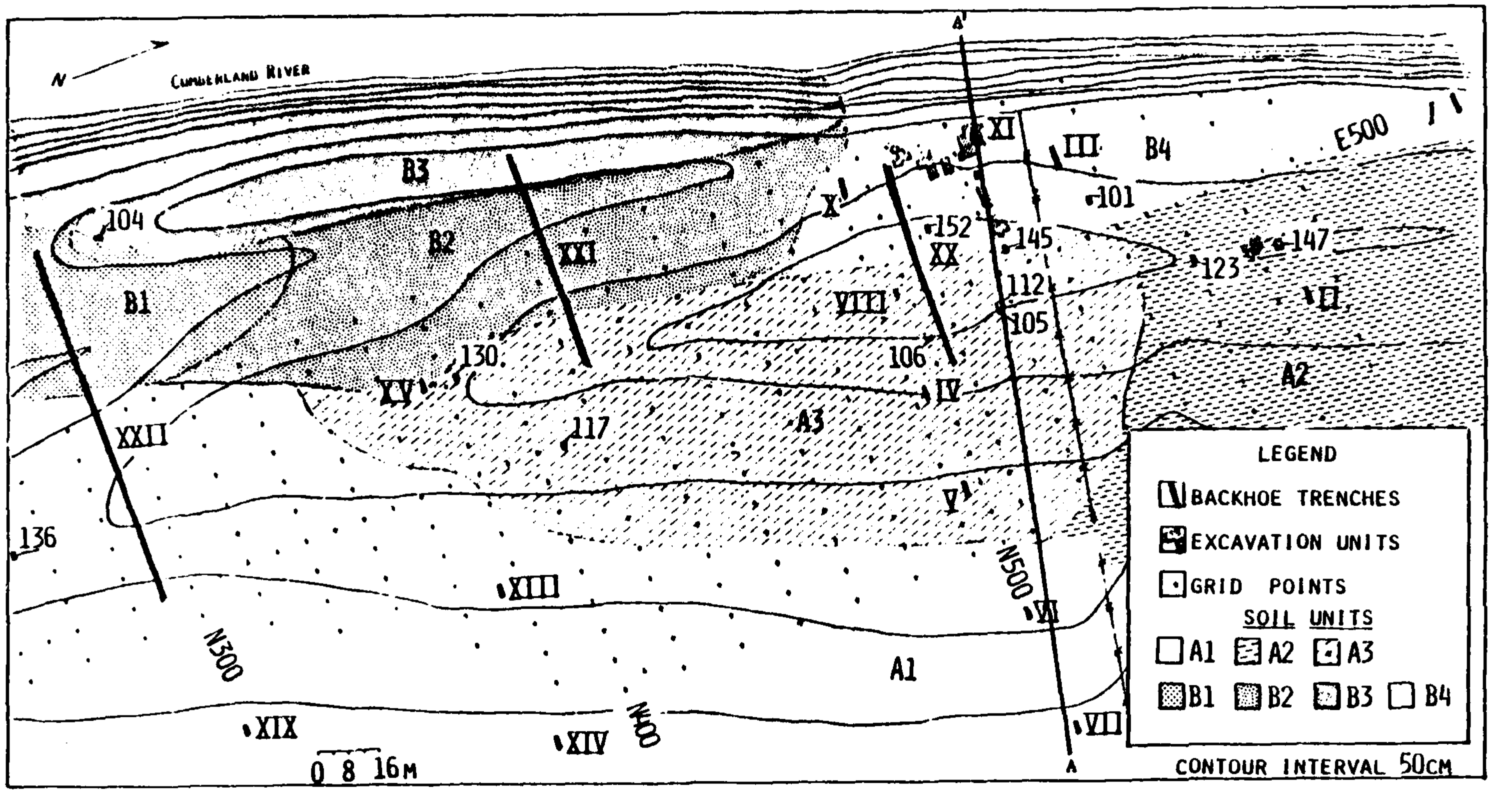


Figure V-2. Topographic map of the Hurricane Branch Site showing soil units and backhoe trenches.

materials...characterized as distinct from surrounding parts by some particular property or content (Gary et al. 1972:803). This general concept was used during field documentation of all profiles. An immediate distinction is apparent between soil zones which exhibit clear evidence of pedogenesis and horizonation and those which do not. Since all of the zones in the vicinity of the site represent alluvial strata which have been deposited by fluvial processes, this distinction is most likely related to the amount of time which any given area has had to stabilize and undergo horizonation. While attempts were made to correlate field-designated soil zones with standardized soil horizon terminology, particularly in the immediate areas of excavation, the wide spacing of the trenches and lack of evidence for pedogenesis precluded correlations for all profiles. Appendix D presents profile descriptions for each trench that was documented, using letter designations for zones recognized in the field. Where possible, these zones are correlated with standard soil horizons. Each profile is individually described and assigned zonal letter designations. Unless specifically stated, zonal designations do not correlate between trench descriptions. However, where soil horizonation is discernible, correlations with standard soil terminology are presented.

The profile descriptions (Appendix D) are based mainly on impressionistic field assessments, although standard soils terminology as outlined in the Soils Survey Manual (U.S. Dept. Ag Handbook No. 18, 1951) was employed for texture and consistence. Although Munsell color plates were not available in the field, a special attempt was made to keep color names consistent throughout the profile descriptions. All determinations regarding soil color and consistence were made from moist samples.

Soil samples were taken from various excavation profiles. Due to budget constraints, however, processing of these samples for this report was not possible.

Analytical Framework

In order to present meaningful explanations regarding the geologic history of the Hurricane Branch Site, the data base had to be organized in a coherent manner amenable to systematic interpretations. For this reason, the site was divided horizontally into two soil bodies (A and B) which were further subdivided into seven soil units (A1, A2, A3, B1, B2, B3 and B4). The concept of soil body will be used to denote a geomorphologically-related area of the site sharing a general pattern of sedimentary and/or pedological characteristics. Soil units were delineated according to more distinctive patterns resulting from geologic, cultural, or soil-forming processes.

With the project area divided into these horizontal units, the vertical correlation of zones was greatly facilitated. Depending upon context, standard soil horizon letter designations or numerical designation for individual fluvial strata were employed in order to avoid reference to several field designations from different profiles for any given soil horizon or stratum. The term soil horizon is used for those vertical zones which exhibit evidence of pedogenesis such that they may be designated as A, B, C...horizons or subhorizons, following standard Soil Conservation Service usage. The term stratum is used in instances where standard horizon terminology does not apply. This situation occurs principally in Soil Unit B4 in which virtually all the zonal distinctions occur within a quite deep A horizon.

Following systematic organization, the data base was then utilized to reconstruct a geologic history of the site. Such interpretations are somewhat limited by constraints imposed in the field (i.e., the physical distances between many of the excavated units). This situation necessitated a certain degree of speculation regarding the continuity of both geologic and cultural deposits.

Another factor inhibiting a more precise historical geologic construction of Site 40JK27 was a failure to find data which would permit the absolute dating of most geologic features within the site. By cross-dating of the recovered cultural materials, however, it was possible to arrive at relatively detailed interpretations regarding the sequence of geological processes and cultural occupations which occurred at the Hurricane Branch Site.

Alluvial and Pedological Setting

The entire Hurricane Branch Site is located upon alluvium deposited during flood stages of the Cumberland River which is located adjacent to the western boundary of the project area. The site is concentrated on and around a low linear rise which runs generally parallel to the river and roughly bisects the project area. The highest point of elevation within the Cumberland River floodplain for several kilometers in either direction is located upon this rise in the vicinity of N516, E493, (Figure V-2). From this point, the axis of the rise slopes gently down to the southern boundary of the project area, and generally levels off in the northern half (see Figure V-2).

Pedologically, most of the project area lies within a mapped unit of the Arrington series. This series is characterized as "a member of the fine-silty, mixed, thermic family of Cumulic Hapludolls" (USDA-SCS 1951). Arrington soils form on alluvial surfaces with slope gradients from 0% to 3%, and are typically well-drained. Native vegetation included oaks, hickory, elm, hackberry, maple, beech, black walnut, ash, yellow-poplar and sycamore.

Backhoe trenches and hand excavation units revealed significant variation between profiles with different geomorphological contexts. Figure V-3 illustrates this variability across the middle portion of the site. This figure graphically shows the contrasting pattern of soil horizons, which were discernable in the eastern half of the site (Soil Body A) and alluvial strata, which were observed in profiles on the western slope of the main rise (Soil Body B).

Soil Body A

This designation refers to the area of the site lying on, and east of, the axis of the main rise. Soil Body A represents ancient and long-stabilized alluvium exhibiting well-developed A and B soil horizons of standard pedological usage.

Soil Unit A1 (Figure V-2)

This subdivision of Soil Body A includes the southern end of the main rise and its eastern flank which slopes toward a backwater slough which lies approximately 100 m east of the site's eastern boundary. The typical soil profile within Soil Unit A1 includes a grayish-brown, silt loam plowzone (Ap horizon) overlying a yellowish-brown, compact silt loam to silty clay B soil horizon containing tree root casts and many large and small concretions of iron and manganese (see Figure V-3). Culturally altered chert was observed in the plowzone in all excavations within Soil Unit A1 except in Trench XIV. Numerous small flakes were also observed in the B soil horizon in Trenches V and VI.

Soil Unit A2

This unit occurred along the axis of the main rise in the northern panhandle of the project area (Figure V-2). Although this soil unit exhibited a soil profile which was similar to that within Soil Unit A1, cultural materials were more densely concentrated in Soil Unit A2, occurring throughout the plowzone (Ap horizon) and well into the B soil horizon (Figure V-4). Early Archaic materials were recovered from the B horizon in hand excavation units in this soil unit.

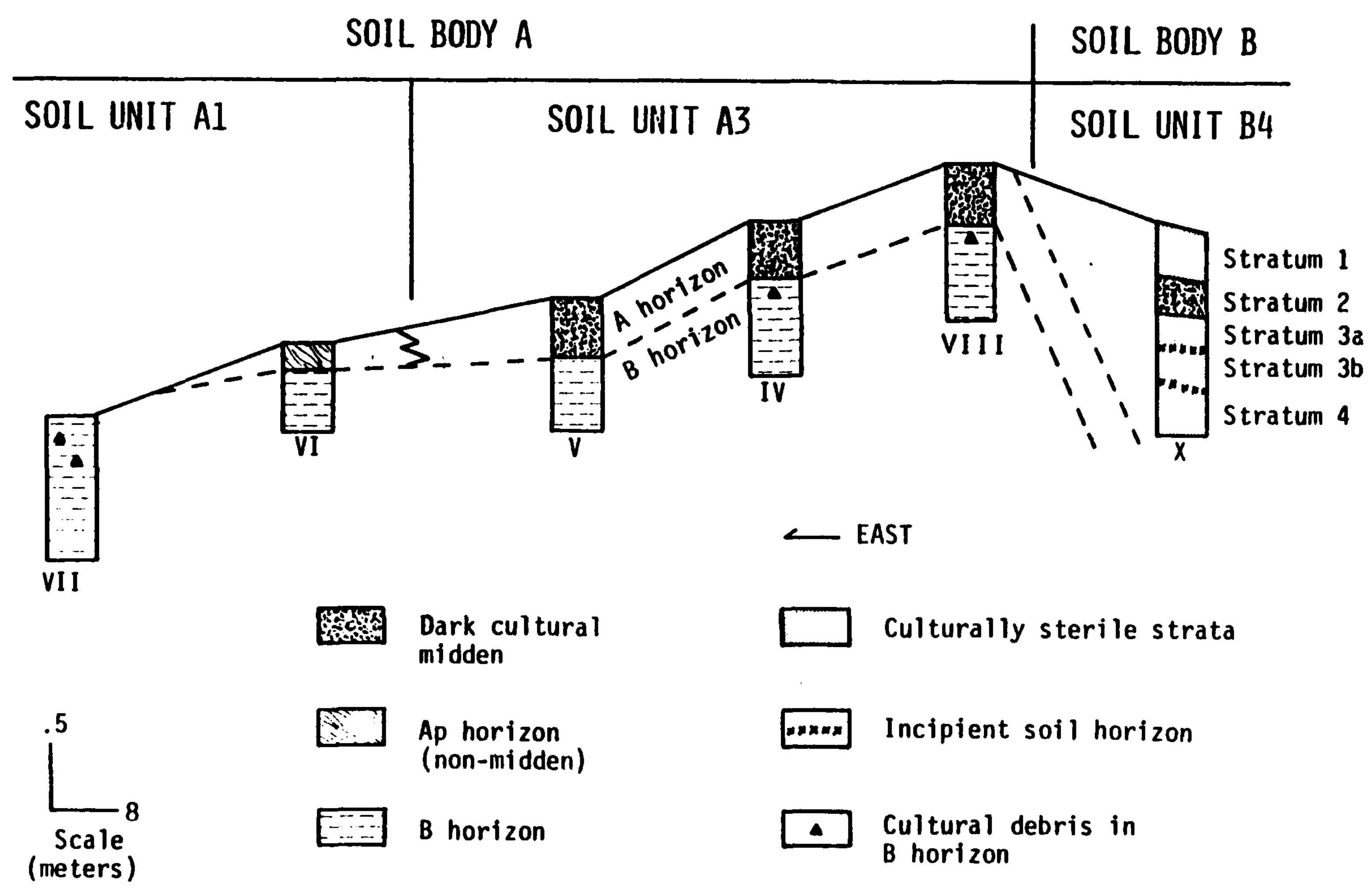


Figure V-3. Correllation of backhoe trenches across the middle portion of 40JK27.

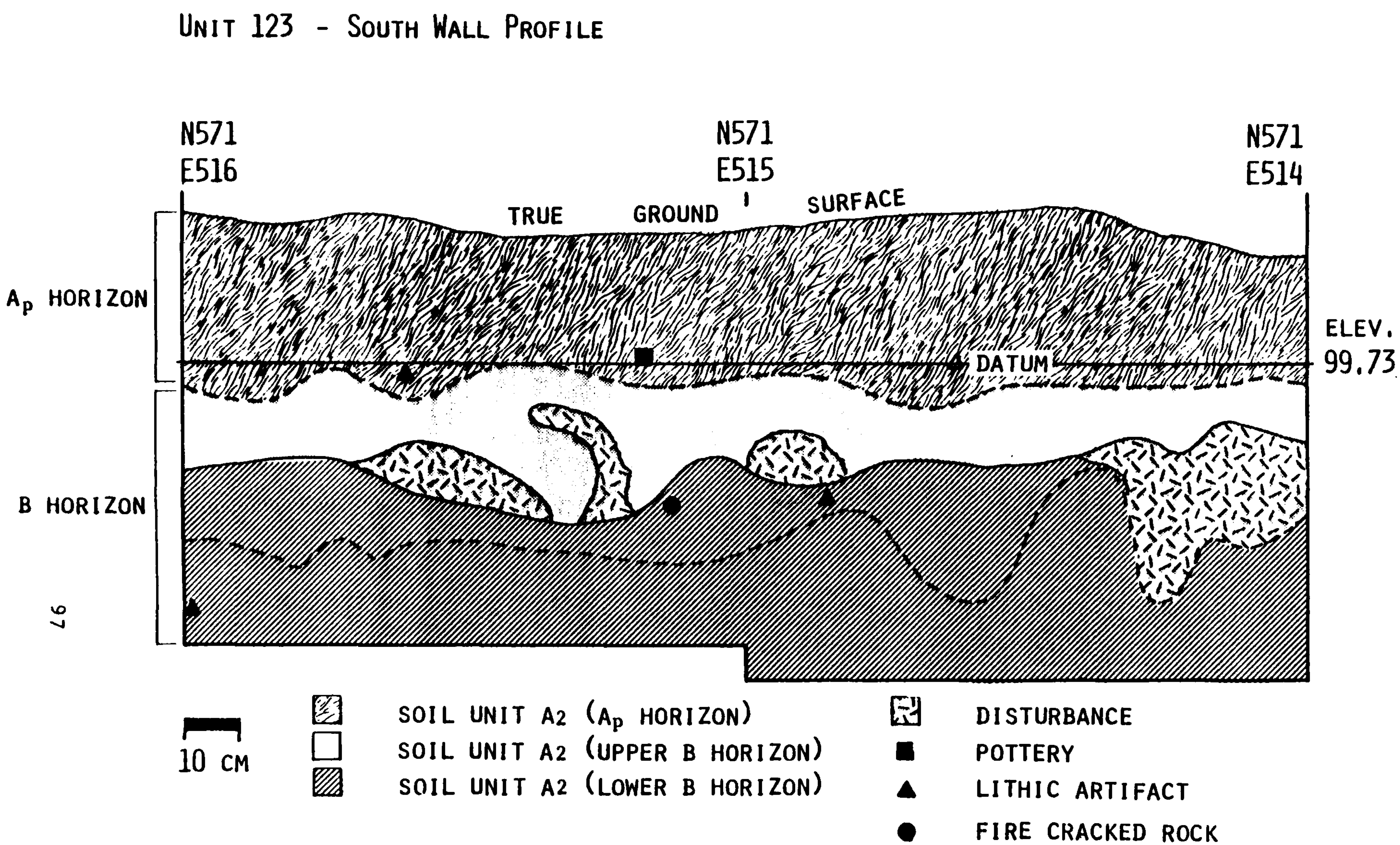


Figure V-4. South Wall Profile of Unit 123.

Soil Unit A3 (Figure V-2)

Along the central axis of the main rise, and extending down the eastern slope of this rise in the vicinity of the N500 grid line, a dark-colored sandy silt loam cultural midden, comprising the A soil horizon, overlies the yellow brown B soil horizon (Figure V-3). Excavations in the vicinity of the N500 grid line revealed this midden zone to be generally 50 cm thick, (including about 30 cm of plowzone), nonstratified, and highly disturbed. Abundant evidence of aboriginal occupation was present in the form of chert debris, fire-cracked rock and charcoal. Subsurface features protruding into the underlying yellow brown B horizon were observed in Trenches IV and V, and in the extreme eastern portion of Trench XX.

The dark midden graded downward into the lighter-colored B soil horizon, where densely concentrated lithic debris of cultural origin was observed, particularly in excavations around the summit area which is within this soil unit. Based on comparisons of the soil profile with that of Soil Unit A2, it appears that cultural materials in the B soil horizon here are probably Early Archaic in origin.

The dark midden (A soil horizon) in Soil Unit A3 continues horizontally to the south where, in the eastern third of Trench XXI, it was observed to be about 40 cm thick, overlying the weathered B soil horizon. Both zones contained cultural materials, but these were less concentrated in the B soil horizon in this trench. In hand excavation units 117 and 130, the dark midden deposit was entirely incorporated within the plowzone (Ap soil horizon). The underlying B soil horizon did not contain significant amounts of cultural materials in either unit. Eight meters south of unit 130, the midden zone in Trench XV (Appendix D, Figure D-2) was overlain by a culturally sterile, yellowish-brown stratum of fine sand and silt which constituted the plowzone. The midden in this trench was 30-50 cm thick, sandy in texture, and contained abundant cultural materials. Both the midden and the plowzone increased in thickness toward the west. Underlying this midden in Trench XV was the familiar yellowish brown B soil horizon which contained sparse evidence of cultural occupation. The stratigraphic superposition of more recent sandy sediments overlying the more ancient sediments of the B soil horizon places Trench XV within a transitional area between Soil Bodies A and B.

<u>Soil Body B</u> (<u>Figure V-2</u>)

This soil body, lying between the axis of the main rise and the Cumberland River, consists of alluvium which was deposited more recently than that comprising Soil Body A.

Profiles in Soil Body B lack developed soil horizons. This soil body exhibits physiographic features which are distinctively fluvial in origin and has been subdivided into four soil units.

Soil Unit B1 (Figure V-2)

The southwestern portion of the site contains a shallow swale which drains and expands in a southward direction, parallel to the Cumberland River. The lower, or southern portion of the swale has been filled with dark-colored, non-stratifed, extremely compact muddy sediments indicative of a reducing depositional environment. These deposits are overlain by a yellowish brown, friable silt loam which constitutes the plowzone, as revealed in the western half of Trench XXII (Appendix D, Figure D-5). This area is poorly drained, and virtually no cultural materials were observed on the surface or in profile.

Soil Unit B2 (Figure V-2)

This subdivision includes the upper reaches of the shallow swale in the southwestern portion of the site. Well-stratified, sandy sediments have been deposited here, as observed in the western two-thirds of Trench XXI (Appendix D, Figure D-4). This soil unit was essentially devoid of cultural materials.

Soil Unit B3 (Figure V-2)

A well-developed natural levee parallels the adjacent Cumberland River from N500 almost to the western extreme of Trench XXII. This levee separates the shallow swale from the river, and is composed of sandy alluvium which exhibited stratification and contained several thin incipient soil horizons as revealed in the extreme western end of Trench XXI. Sandy deposits with no obvious stratification were observed in the shallow profile of Hand Excavation Unit 104.

Soil Unit B4 (Figure V-2)

This designation refers to recent alluvium which was deposited to the west of the main rise in the northern half of the project area (north of approx. N490). A stratigraphic succession involving friable, fine sandy sediments was observed in excavation profiles throughout this soil unit. A yellowish brown plowzone, designated Stratum 1, was observed to overlay a dark grayish-brown to black deposit, designated Stratum 2, which in turn overlays a lighter colored layer (Stratum 3). similar to the plowzone (see Figures V-3 and V-5) Stratum 3 contained at least two incipient soil horizons similar to thin bands observed in the western portion of Trench XXI. Underlying Strata 1-3 in the southern portion of Soil Unit B4 is a zone of finely-

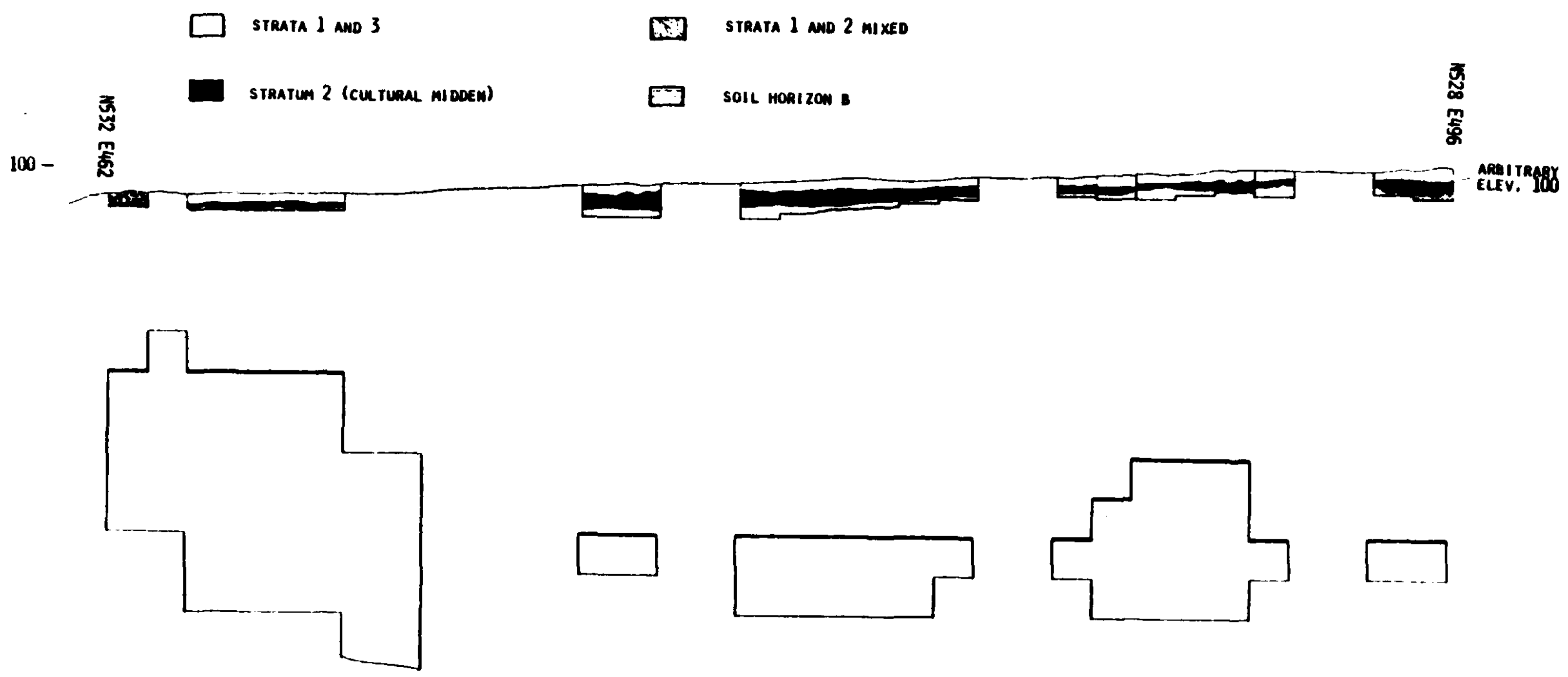


Figure V-5. Composite profile of correlation of zones in excavation unit profiles in Soil Unit B4.

laminated, relatively compact fine sand which show evidence of weathering and root disturbances toward the main rise. This zone, observed in Trenches X and XX, has been designated as Stratum 4.

Within the small promontory which extends westward from the summit area of the site (see Figure V-2), abundant cultural materials indicative of intensive Middle Woodland and very ephemeral Mississippian occupations were recovered in hand excavation units from Stratum 2. These materials quickly decreased within Stratum 2 on either side of this promontory. Stratum 2 grades westward into the A2 soil horizon of Soil Unit A3 (Backhoe Trench XX) (Appendix D, Figure D-3).

Within the heavily occupied area of the promontory, Stratum 2 consisted of a mosaic patchwork of colors including black, organic-rich stains along with dark grayish-brown and dark brown areas. The black stains are discussed more fully in Chapters VI and VII. Stratigraphically, much of the dark midden zone comprising Stratum 2 within the promontory exhibits a thin upper substratum (Stratum 2A), which is still dark grayish-brown, but slightly lighter in color than the underlying portion of the midden or Stratum 2b.

Interpretations and Conclusions

This section presents a discussion of the Holocene geologic history of the Hurricane Branch Site. The interpretations are organized into four temporal stages which describe the geomorphological development of the site. Figure V-6 illustrates these four stages in cross section. The location of this cross section is indicated in Figure V-2 by the line labeled A to A'. An emphasis is placed upon the relationships between fluvial processes and cultural occupations and activities.

Stage 1 (ca. 8,000-6,000 B.C.)

During this period, a depositional episode of undetermined time span resulting in the build-up of floodplain deposits within Soil Body A was nearly complete. The channel of the Cumberland River was presumably located east of its present position during Stage 1, within the area that is now designated as Soil Body B.

The main rise which bisects the project area is assumed to have been a natural levee during Stage 1. This interpretation is based upon topographic evidence and the

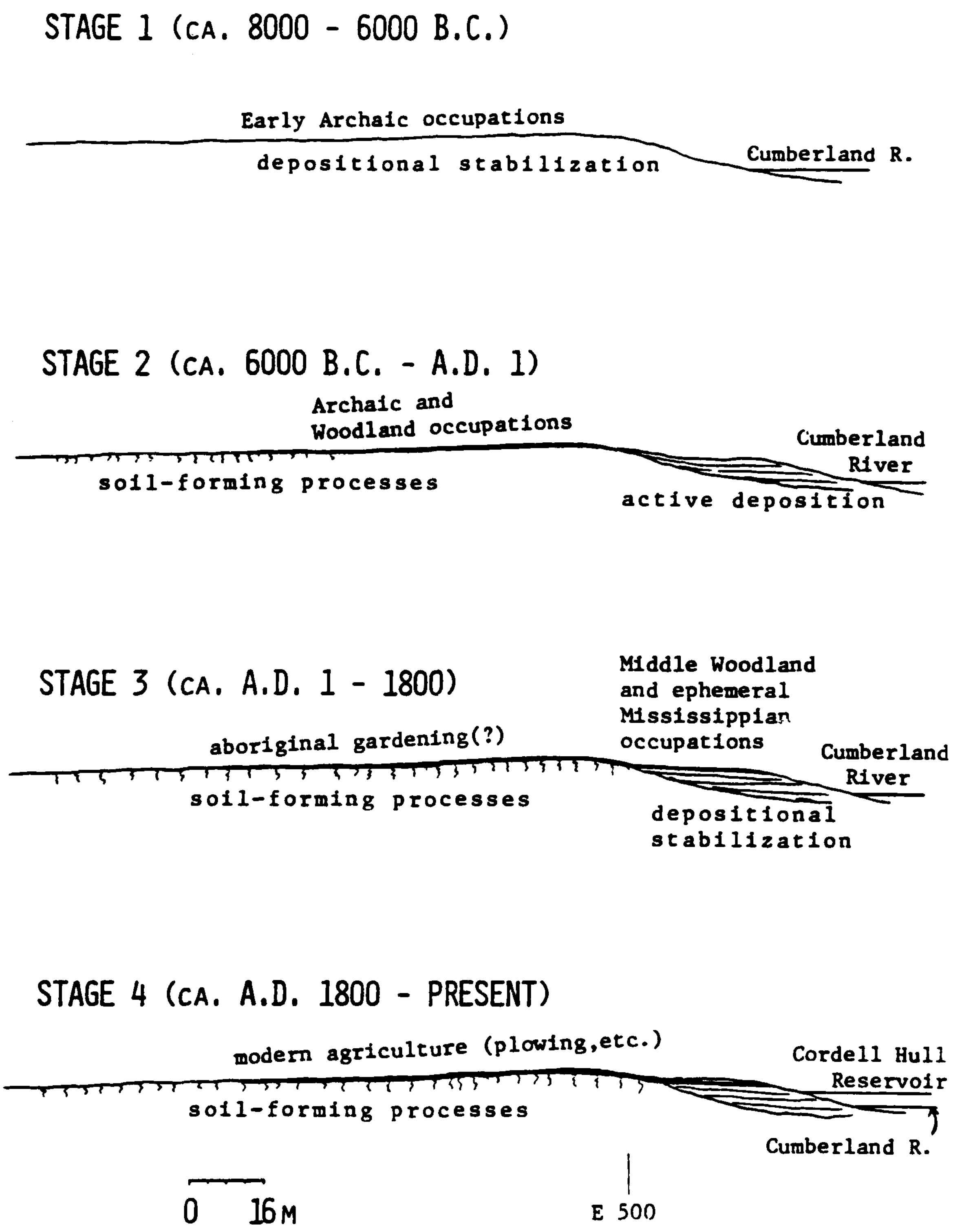


Figure V-6. Geologic history of the Hurricane Branch Site in cross section (for location see A - A', Figure V-2).

subsurface profiles of Trenches XX, XXI, and XXII which show the light colored and highly weathered B soil horizon of Soil Body A sloping under the more recent deposits of Soil Body B. Stripping away the deposits comprising Soil Body B, a classic floodplain profile could be seen, showing a natural levee sloping gently toward the backwater slough to the east of the project area.

The channel of Hurricane Branch, which at present joins the Cumberland River north of the project area, may have flowed within the aforementioned backwater slough in past times (Figure V-7B). This contention is supported by topographic evidence (Figure V-7A) and the general tendency of tributaries entering floodplains with well-developed natural levees to flow parallel to the parent stream before breaching the natural levee at a downstream location to join the main river channel (Bloom 1978).

When active fluvial build-up of the sediments comprising Soil Body A was nearing stabilization, cultural occupation of the site began by groups possessing artifacts which are typologically assignable to the Early Archaic Period. These artifact types have been found stratigraphically segregated at several sites in the Eastern United States (Broyles 1971; Chapman 1975, 1977, 1978; Collins 1979 et al.). At the Hurricane Branch Site, however, these artifact types were contained within the top half-meter of subsoil within Soil Units A2 and A3.

Given the density of artifacts within the B soil horizon in Soil Units A2 and A3, there may have been intensive occupation at the site by Early Archaic groups which would have resulted in midden staining of the enclosing sediments. If such organic staining occurred, it has since been removed along with floral remains by leaching and other soil forming processes. Another possibility is that the Early Archaic remains at the site represent recurring light occupations. Such an occupational pattern would not necessarily have produced dark midden staining. Which of these alternate explanations best fits the situation could not be determined by geological evidence alone.

Stage 2 (ca. 6,000 B.C.-A.D. 0)

Sometime during or following the cessation of active sedimentary deposition within Soil Body A, the channel of the Cumberland River shifted westward. The exact mode of this channel displacement

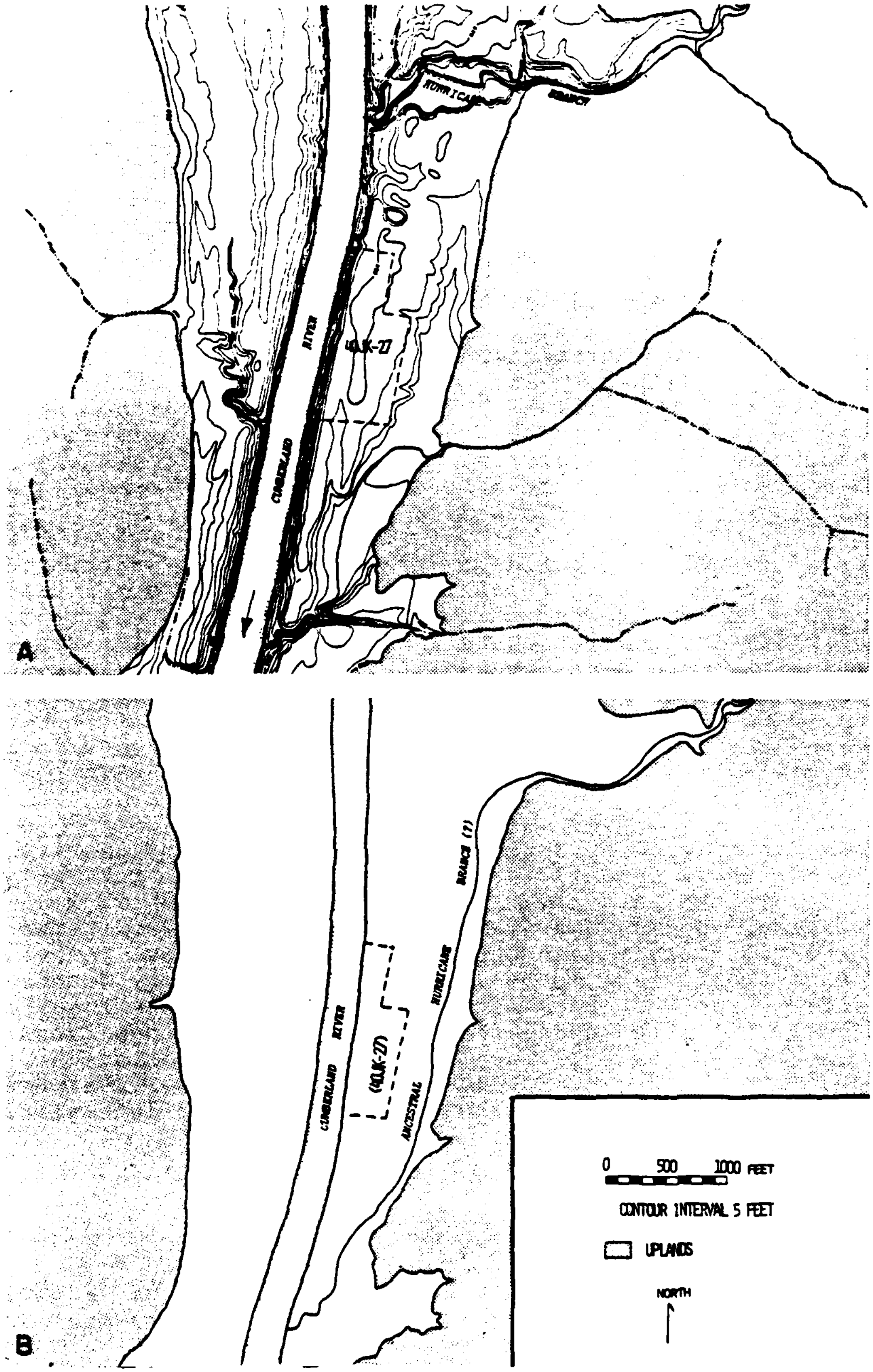


Figure V-7. Artist reconstruction of then and now at Site 40JK27.
A) Present topographic regime
B) Postulated Early Holocene position of Hurricane Branch and the Cumberland River.

is somewhat unclear. This process may have involved gradual shifting of the channel or sudden displacement. The shallow swale within Soil Body B may represent an abandoned chute (or crevasse) of the Cumberland River, which would indicate that a sudden displacement occurred in the southwestern portion of the site. This would have involved cut-off during a flood stage of the present swale, followed by establishment of the present channel regime, filling in of the abandoned chute (the present topographic swale), and building of the natural levee comprising Soil Unit B3. Floodwaters breaching the developing natural levee in the vicinity of N500 E450 would have been partially responsible for filling of the swale, or (Soil Units B1 and B2). Sandy sediments were "dumped" in the upper stretch of the swale (Soil Unit B2) as the energy level of floodwaters was drastically reduced upon topping the bank, a process similar to that forming crevasse-splay features (Reineck and Singh 1980). Finer particles would have been deposited along with muddy sediments contained in standing backwater in the downstream portion of the swale, giving rise to Soil Unit B1.

Active deposition involving Soil Units B1, B2, and B3 was not restricted to Stage 2, but continued up until modern times. Virtually no cultural materials were observed in Soil Units B1, B2, and B3, a fact possibly due to frequent inundation and poor drainage within the swale.

During and following the westward displacement of the Cumberland River channel, relatively rapid accumulation of sandy sediments took place within Soil Unit B4, resulting in well-stratified deposits. It appears that throughout Stage 2, the rapidly building surface of Soil Unit B4 was not high enough above frequent floodwaters to permit aboriginal occupation.

The relatively rapid accumulation of sediments involved in the development of Soil Body B was apparently slowed enough at times to permit very incipient soil development to take place. Very thin soil horizons were observed in profiles within Soil Units B2, B3, and B4.

While deposition leading to the development of Soil Body B was taking place, the surface of Soil Body A had become relatively stabilized, and soil-forming processes began, resulting in the development of pedologic horizons. These processes have since obliterated any discernable distinctions between alluvial strata in Soil Body A. Aboriginal occupation apparently continued on surfaces within Soil Body A, producing the dark midden deposit, now represented by the A soil horizon of Soil Unit A3. Lighter occupations may have occurred in other areas of Soil Body A (see Chapter VII), represented by artifacts encountered in nonmidden plowzones.

Stage 3 (ca. A.D. 0-A.D. 1800)

Sometime around A.D. 0 - A.D. 100, fluvial sedimentation in Soil Unit B4 stabilized above frequent floodwaters enough to permit aboriginal occupation. The fine, well-drained sands of Soil Unit B4 offered a very suitable habitation surface. The small promontory extending westward from the summit area of the site became the focal area of the Middle Woodland occupation represented by Stratum 2, which apparently comprises the only intensive occupation within Soil Body B.

Cultural occupation and/or activities probably continued on the surface of Soil Body A, but due to the absence of stratified sediments and the relatively mixed condition of the dark midden within Soil Unit A2, this is somewhat difficult to assess at this point.

One activity which may have been carried out at the site by the Middle Woodland occupants was gardening, since both early maize and squash were recovered from Stratum 2 in Soil Unit B4 (see Chapter VI). The summit area of the site would have presented a suitable environment for the growing of cultigens, given the organically-rich midden soil deposited there by earlier occupations, and the diminished risk of flooding due to the elevated position within the floodplain.

Sometime after the close of the Middle Woodland occupation within Soil Unit B4, a light Mississippian occupation occurred on the small promontory. This was evidenced by a small amount of shell-tempered ceramics recovered from Strata 1 and 2. Although the materials left by these later activities became partially mixed with the dominant Woodland debris, the Mississippian occupation may be stratigraphically represented by Stratum 2a. This is only conjecture; however, since the stratigraphic subdivisions of Stratum 2 were only distinguishable in excavation profiles, precluding stratigraphic excavation of these substrata.

Stage 4 (ca. A.D. 1800 to Present)

Following aboriginal occupation on the small promontory within Soil Unit B4, a clean sandy layer of alluvium (Stratum 1) was deposited over the cultural midden (Stratum 2). This depositional episode resulted in stratigraphic sealing of the Woodland-dominated Stratum 2.

With intensive Euro-American occupation of the area in the nineteenth century, land clearing and plowing commenced at the site. These activities further disturbed cultural materials in Soil Body A, but left Stratum 2 of Soil Unit B4 mostly intact since plowing only disturbed Stratum 1. Only along the river bank edge were both Strata 1 and 2 mixed.

Soil-forming processes continued to take place within Soil Body A, but were somewhat altered due to the superimposition of an Ap horizon or plowzone.

Fluvial deposition in the middle Cumberland River floodplain was modified in the 1960s when creation of the Cordell Hull Reservoir brought the natural processes of the river under human control.

Summary

The utilization of geologic data was indispensible in arriving at interpretations regarding the development of the natural environment with which aboriginal occupants of the site interacted on a very intimate basis.

Well-drained soils, protection from floodwaters due to relative elevation within the floodplain, and easy access to several microenvironmental zones (including the Cumberland River, various floodplain zones, and the nearby uplands) were all factors which ultimately relate in part to the geologic history of the site, and served to attract aboriginal groups to this locality during prehistoric times.

CHAPTER VI

CULTURAL MATERIALS

Introduction

This chapter presents an analysis of the various categories of archaeological data recovered during the fieldwork phase of this project. These materials have been placed in the following general categories -- chipped and ground stone tools and manufacturing debris, ceramics, botanical remains, faunal remains, and features. Each category is discussed separately and compared, when appropriate, to similar data in the literature. All artifacts are drawn to actual size unless otherwise indicated. In the metrics "nt" and "nm" indicate measurements not taken or artifacts not measured respectively.

Lithic Artifacts

by
Jared Funk
Nancy O'Malley

As is common in the majority of archaeological sites in open settings, the bulk of the material culture which survives the rigors of an environment mitigating against preservation is the nonorganic material such as chert and limestone. This section is concerned with the chipped and ground stone artifacts which were made and used by the occupants of the Hurricane Branch Site. Chipped stone tools and debris associated with their manufacture are discussed first, followed by a section on ground stone tool manufacture.

The Chipped Stone Industry

Models of chipped stone tool manufacture share the purpose of integrating typology with the interpretation of production processes (Holmes 1894; Sharrock 1966; Skinner 1971; Collins 1975; Johnson 1977; Patterson 1977). These two processes are a synthesis of two classification schemes, one based on morphological characteristics and the other on inferences concerning the behaviors which produced the artifacts. One such model (Collins 1975) provides the theoretical framework for the typology employed in the analysis of chipped stone materials from the Hurricane Branch Site.

Collins' model is based on the premise that a chipped stone tool is produced by reducing a piece of raw material; that is, material is progressively removed in specific and regular fashion until the desired form is reached. Therefore, all artifacts can theoretically be placed within a reductive continuum, depending on the degree to which they have been reduced. This theoretical model can be operationalized into an effective and useful artifact typology comprised of six reductive/behavioral stages. These include: 1) acquisition of raw materials suitable for knapping; 2) initial reduction of the raw material 3) primary flaking into a general shape suitable for further modification or for use as is; 4) secondary flaking into the final shape and addition of specific desired attributes such as notching, serration and the like; 5) use of the produced artifact; 6) reworking of the artifact in an effort either to restore a worn implement to its original use or transform it to a different function. This model has been demonstrated to have considerable utility and validity through both replicative experiments and comparison with ethnographic and ethnohistoric accounts of tool manufacture (Funk 1981).

Manufacturing activities at each stage produce attributes which, in most cases, can be recognized after the artifact has been removed from its archaeological context. These attributes can be incorporated into distinctive product groups. Figure VI-1 outlines the relationships between the reductive stages and resultant product groups. Each product group may contain items which are limited to that group or certain categories of items may occur in any or all groups.

Product Group I is derived from the acquisition of raw material. Contained within this group are nodules, cobbles, chunks or other stone pieces which may be used for tool manufacture. The vast majority of such stone is chert which is distinguished by its tendency to fracture conchoidally; however, other stone does occur. Raw materials identified as part of this product group generally include those pieces found out of their normal geological context and placed within cultural contexts. Inferences derived from such data include behaviors such as quarrying, collecting, or exchange.

Product Group II is the result of the initial shaping of the raw material which yields such artifact types as cores, flakes, crude bifaces or scrapers and choppers. The shape of an artifact placed in this group is not substantially altered from its original form. Several behaviors may be inferred from this group including, the selection and preparation of cores for the production of specialized

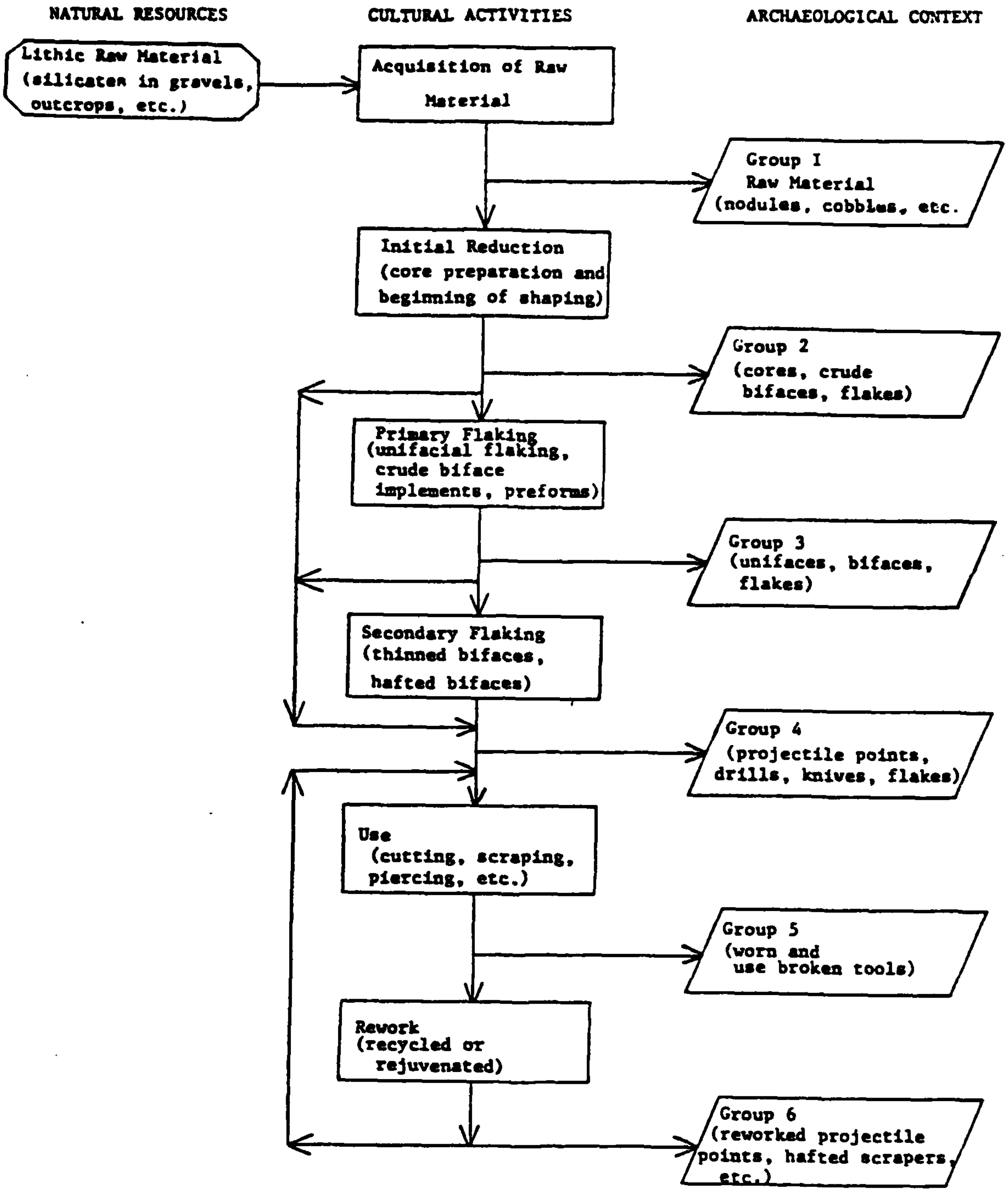


Figure VI-1. Schematic representation of the relationships among the lithic technological system, the various product groups, and the physical environment (Boisvert et al. 1979:62).

flakes, the selection of flakes for further modification, or the preparation of preforms intended for further modification. It is also possible to have artifacts which may actually have been used; however, these are not particularly common.

Product Group III is the result of continued modification of preforms produced in the preceding group. These artifacts have been substantially altered from their original form such that the approximate size, dimensions, weight and outline of the artifact are established. At this point, some artifacts may be ready for use while others may be intended for further modification. Also included in this grouping are modified flakes which are used for various cutting, scraping and piercing tasks.

Product Group IV is the result of still further modification of the preforms produced in the previous stage. This includes specialized techniques such as serrating, beveling, edge straightening, notching, or grinding as well as further thinning to reduce the artifact to its final shape. Tools such as projectile points, drills, knives and the like are included in this stage.

Product Group V by definition includes all utilized artifacts. Without employing the complex and lengthy techniques necessary for recognizing use-wear, the identification of such artifacts is not usually possible. For this particular project, no attempt to recognize artifacts belonging to this product group has been made. However, it is mentioned here since it is an important part of the sequence.

Product Group VI is the result of attempts to recycle or rejuvenate artifacts which have become worn or broken. Recycling refers to the practice of transforming a worn or broken artifact from its original function to a different one. Rejuvenation refers to the restoration of a worn or broken artifact to its original function. Identification of artifacts placed into this group presupposes the existence of analogs in previous stages.

In addition to the types of artifacts discussed in the above categories, all reductive stages yield manufacturing debris such as flakes or debitage. Flakes can be analyzed and placed into their respective reductive stages; however, this is a time-consuming and complicated process which has not been attempted in this analysis. It is important to remember, however, that this can be done and may reveal significant patterns and trends in lithic artifact manufacture.

The typology which is derived from the theoretical model discussed above includes several features which yield interesting and informative data in addition to incorporating the reductive sequence. An important aspect of the typology is the recognition of the condition of the artifact which may indicate the reasons for its abandonment. The following conditions are recognized:

1) unbroken specimens which do not exhibit evidence for abandonment during manufacture;

2) unbroken specimens which do exhibit evidence for abandonment during manufacture;

3) broken specimens which exhibit evidence that breakage occurred during manufacture;

4) broken specimens in which the cause of breakage is not known. Figure VI-2 presents a graphic depiction of the matrix which can be generated by combining the reductive sequence and condition.

All chipped stone artifacts can theoretically be assigned to one of the cells depicted in Figure VI-2. Specific artifact categories are assigned a six-digit number which is entered into computer files. The number of each artifact category is included within the individual descriptions of the artifact which follow. Briefly, the first digit refers to the stage of reduction in which the artifact has been placed; that is, a 1 indicates material relating to acquisition of raw materials; 2 indicates initial reduction; 3 refers to primary flaking; 4 to secondary flaking; and 5 to reworking. Note that the stage indicating use of the artifact is not included in the typological numbering system since this phase of the sequence is not being addressed in this analysis.

The second digit refers to the condition of the artifact such that a 1 refers to unbroken unaborted artifacts, 2 to unbroken aborted artifacts, 3 to broken aborted artifacts, and 4 to broken artifacts of undetermined cause. The last four digits refer to a morphological and stylistic coding which identifies groups of artifacts such as bifaces, unifaces, projectiles, etc. It is not necessary to understand the six-digit coding system in order to follow the discussion of the lithic artifacts presented in this chapter; however, the type category numbers are included for future reference with other reports which use the same system.

Additionally, a number of measurements were taken for each category of artifacts. These include a variety of metric measurements, along with a narrative description of the type and comparisons with other known examples which are similar. Figure VI-3 presents the measurements which were taken on the various artifact categories.

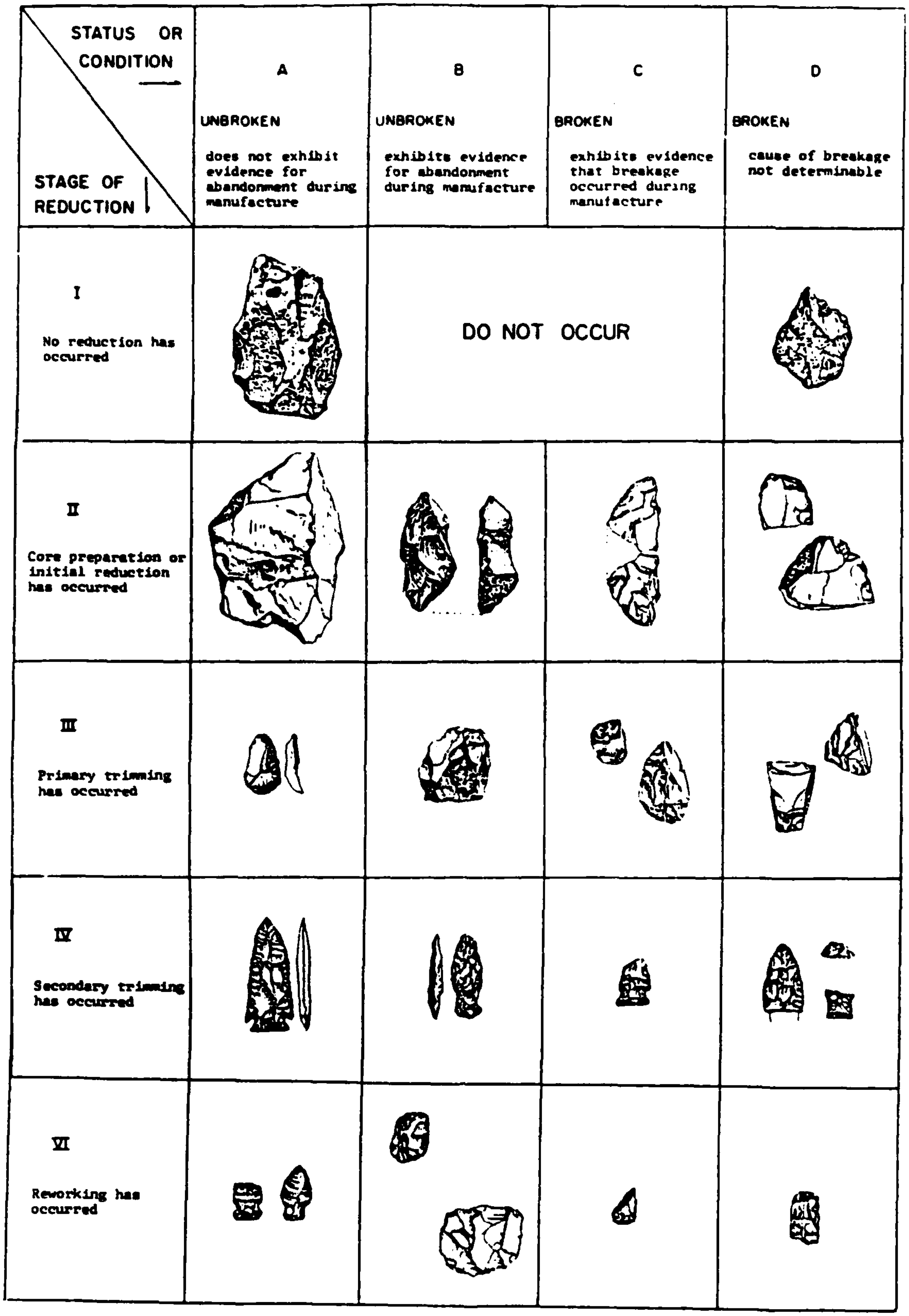
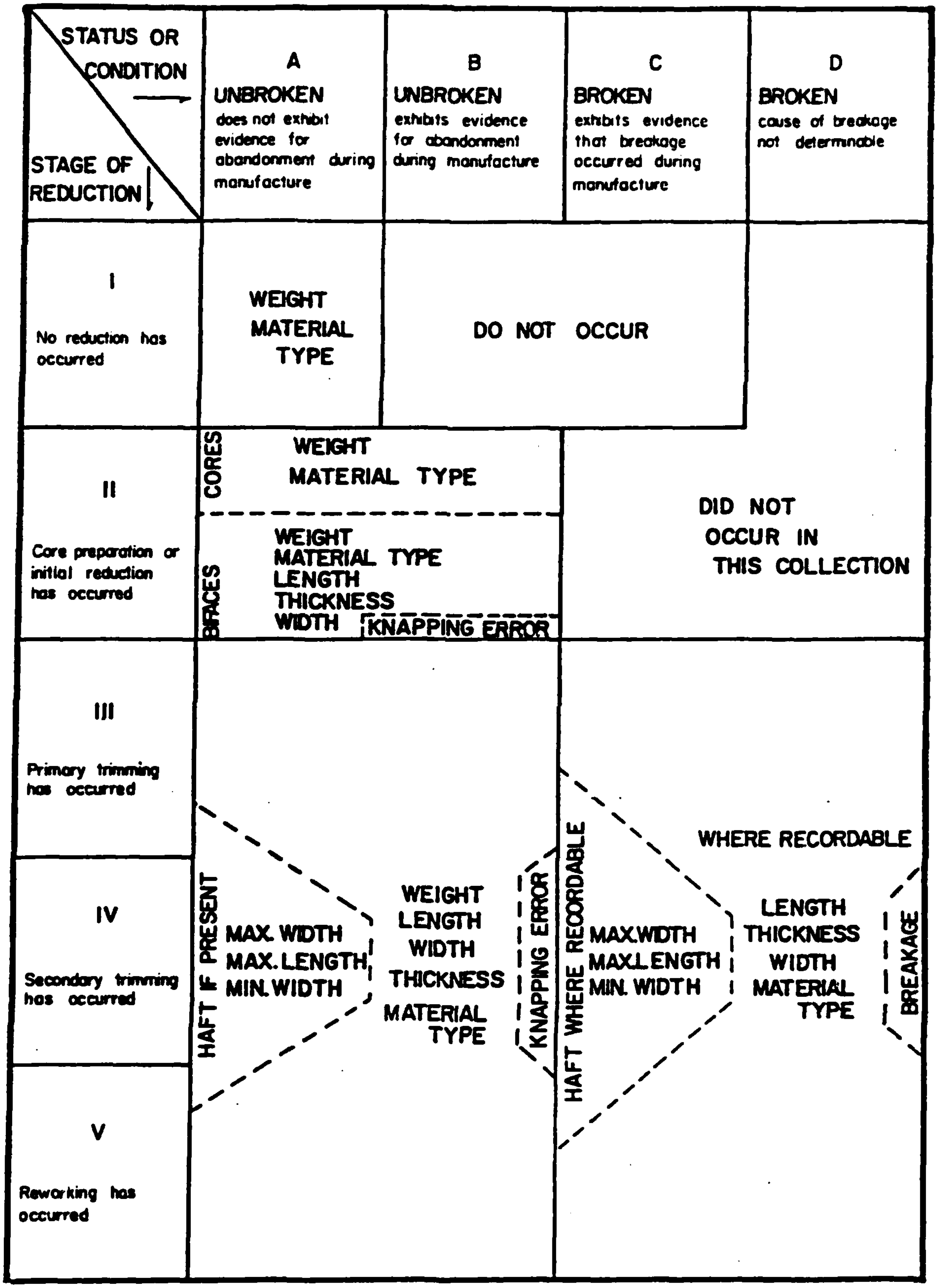


Figure VI-2. Schematic representation of lithic classification (Boisvert et al. 1979:64).



*No additional attributes recorded for marginally modified flakes.

Figure VI-3. Recorded attributes by technological category of chipped stone (O'Malley 1980: 304).

One potentially important observation which was not taken was the identification of material type. The identification of available chert sources for subsequent use in material type identification of artifacts is a complicated procedure. All too often identifications are made without reference to a carefully provenienced comparative collection from reliably identified chert outcrops. Recent efforts by Gatus (1980) have underscored the value of chert resource studies and emphasized the dangers inherent in material type identification in absence of specific information on chert bearing geologic formations. Since a comprehensive chert resource study has not been carried out for the area in and around Site 40JK27, no attempt was made to provide material type identification of the artifacts.

The following discussion of the lithic artifact types recognized during the analysis is organized by reductive stage. All of the chipped stone artifact categories with the exception of two were placed within the reductive stages discussed above. The exceptions are chunks and flakes. Chunks are amorphous pieces of chert or other stone which do not retain sufficient characteristics to adequately identify them as to reductive stage. Flakes can be so typed; however, this process was precluded by financial and logistical constraints for this project. A brief discussion of chunks is included under the initial reduction stage and flakes are described under primary flaking. As previously noted, this organization does not refer to their actual classification within stages, but merely is a convention employed for this report.

Stage I - Acquisition of Raw Material

Acquisition of raw material involves such activities as quarrying from existing outcrops, collecting from gravel deposits or obtaining material through trade or exchange. Artifact categories included within this stage are unmodified raw material and chunks.

Unmodified Raw Material

107 specimens
Type Category: 110000

METRICS: Not taken

DESCRIPTION: This category includes silicious materials (chert) which exhibit form consistent cortex or patination. Both tabular and cobble types are included in this category. A few of these artifacts may overlap with chunks at the smaller end of the scale but the former tend to be larger.

These items are isolatable from purely natural rocks on Hurricane Branch because the deposits are all clays, loams and silts. There are no natural gravels present. Although chert type was not included in the analysis, a general inspection of the unmodified raw material led to two observations: 1) The bulk of the raw material is tabular and 2) it matches the Ft. Payne variety present in the ridges overlooking the site.

Chunks

9305 specimens
Type Category: 110100/110101

DESCRIPTION: Chunks are considered to be pieces of chipped stone which are small (less than 30 g in weight), angular and do not exhibit flake scars. They are often indistinguishable from some naturally occurring stones. They may, in some cases, be shattered fragments. Their inclusion within this stage of reduction is merely a convention since it is not usually possible to accurately determine where they actually belong.

Stage II - Initial Reduction

Stage II involves the preliminary shaping and preparation of the raw material. The reduction is intended to: 1) produce specific kinds of flakes for use or further reduction and modification; 2) shape the parent piece into a desired form for either immediate use or further modification. A variety of categories are included within this stage including, cores, bifaces, choppers, scrapers and flakes.

Cores
981 specimens
Type Category: 210000 (normal - 920 specimens)
220000 (aborted - 61 specimens)

METRICS: Weight 1 - 61 g (avg. 56 g)

DESCRIPTION: Cores are irregularly shaped pieces of chert (or other silicious stone) characterized by multiple facets and negative flake scars. The dimensions of length, width and thickness are generally equivalent but this is not prerequisite. Cores and core fragments were not differentiated; however, aborted cores were identified by the presence of one or more test flake scars.

Ovate Unifaces

Figure VI-4
14 specimens
Type Categories:

211311 (shallow retouch - 5 specimens)
211312 (steep retouch - 9 specimems)

METRICS: Weight	27-98g	(avg. 54.5g)
Length	43-76mm	(avg. 59.5mm)
Width	33-65mm	(avg. 45.1mm)
Thickness	12-30mm	(avg. 19.5mm)

DESCRIPTION: These are amorphous, angular tools with crude unifacial flaking exhibited along one or more edges. All the specimens exhibit varying proportions of cortex. A scraping function is inferred on the basis of the preparation of a unifacially chipped working edge.

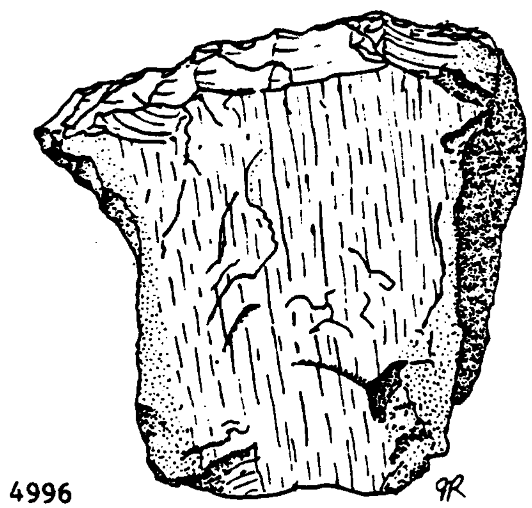


Figure VI-4. Ovate Uniface

Chopper

Figure VI-5
1 specimen
Type Category: 214359

METRICS:

Weight	868g
Length	142mm
Width	94mm
Thickness	55mm

DESCRIPTION: This is a large subrectangular tool formed by the unifacial removal of flakes from a small portion of one edge. Cortex covers the majority, if not all, of the unflaked surface. A chopping or battering function is indicated by hinge fractures along the worked edge of this specimen.

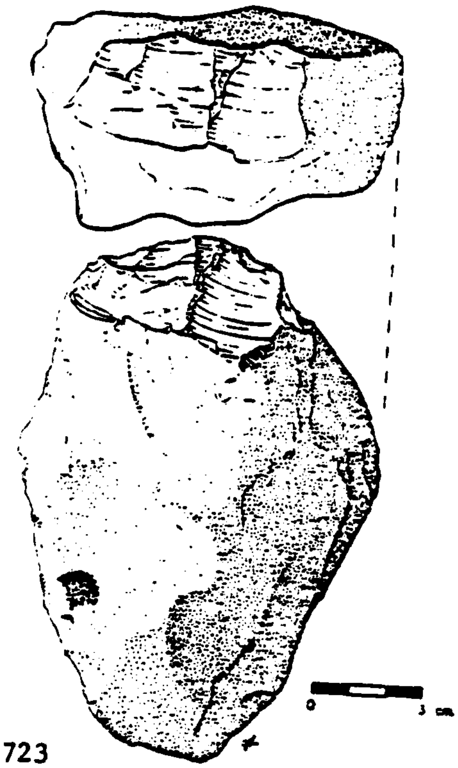


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Figure VI-5. Chopper

Initial Reduction Bifaces

Bifaces at this stage of reduction were separated from cores according to a standard formula where length is substantially greater than width and width is substantially greater than thickness. Bifaces are produced by the detachment of large broad flakes until a roughly ovate or triangular shape is achieved. These usually have a biconvex cross section. They may be used as tools at this point or may be intended as "preforms" to be further modified. Fragmentary and whole specimens were typed into the following nine categories.

Biface Fragment (Round Base)
3 specimens
Type Category: 234903

Biface Fragment (Indeterminate Base)
4 specimens
Type Category: 244910

Biface Fragment (Tips and Corners)
1 specimen
Type Category: 244940

DESCRIPTION: The above specimens all represent fragments which are too small to be reliably reconstructed as to shape of the original piece.

Ovate Bifaces

Figure VI-6
12 specimens
Type Categories:
21/22/234913 (Round base - 8 specimens)
244917 (Elongated - 1 specimen)
214915 (Backed - 3 specimens)

METRICS: (taken on 7 specimens)

Weight	170g	90g	39g	156g	64g	99g	23g
Length	101mm	86mm	70mm	107mm	81mm	61mm	45mm
Width	74mm	32mm	27mm	50mm	50mm	59mm	39mm
Thickness	17mm	30mm	19mm	20mm	20mm	22mm	18mm

DESCRIPTION: These specimens have been chipped to a roughly ovate form. The bases of the specimens vary slightly as indicated above. Most of the ovate bifaces exhibit cortex and all are marked by crude random flaking. A few were probably aborted but the quality of workmanship precludes an accurate estimation of the extent of use, if any, or even a clear understanding of the intentions of the knapper. All the categories except for the backed variety are fairly symmetrical in form. The backed bifaces are more asymmetrical due to the presence of a weathered, cortical or highly chipped edge which probably was meant to protect the hand during use.

3469

Figure VI-6. Ovate Biface (Round Base)

Triangular Bifaces

7 specimens
Type Categories:
21/234941 (Straight base, angular corners - 2 specimens)
224942 (Straight base, round corners - 1 specimen)
22/23/244943 (Round base - 4 specimens)

METRICS: (taken on complete specimens)

Weight	81g	120g	96g
Length	80mm	85mm	96mm
Width	43mm	50mm	40mm
Thickness	25mm	25mm	25mm

DESCRIPTION: These specimens have been chipped to a roughly triangular form. The bases vary slightly as indicated above. Like the ovate bifaces, the final destination intended for these artifacts is not readily discernible since they were consigned to the archaeological record at a very early stage of reduction. Manufacturing errors or material flaws caused the abandonment of some of the specimens; however, some of them could have been used as tools.

Flakes

73,825 specimens
Type Category: 210100

DESCRIPTION: Flakes are the by-product of the reductive manufacturing process. They are characterized by a striking platform where the force to detach the flake was applied, an attendant bulb of percussion, a smooth, unmodified interior surface, and an exterior surface which may exhibit previous flake scars, cortical surfaces or a combination of both. The force required to detach the flake may be derived by either free-hand or indirect percussion or pressure. Flakes are produced at any and all stages of reduction.

Reductive Stage III - Primary Flaking

Artifacts included under this stage are characterized by further modification of specimens produced by the initial reduction. "Shaping is the principal objective of this activity set" (Collins 1975:21). However, shaping may be limited to one or more edges and/or may affect both faces of the piece. "In the case of implements which receive their final shaping at this step, all of these aspects of shape are attained in a single operation. Those destined for further reduction are termed 'preforms' and usually receive only their sectional shape and approximate outline at this time (Collins 1975:22). Specific artifact types associated with this stage include modified flakes, scrapers or unifaces, uniface-bifaces, bifaces and hoes.

Modified Flakes

All flakes which exhibit limited chipping or "retouch" along one or more edges are placed in this category, regardless of which stage produced the original flake. Two major groupings, marginally modified and systematically modified flakes, are recognized; the latter being further subdivided on the basis of the type of edge retouch.

Marginally Modified Flakes and Flake Fragments

129 specimens
Type Categories: 31/341100, 341200

METRICS:
Weight less than 1 - 120 g (avg. 13.3g)

DESCRIPTION: This category includes flakes of various forms which exhibit a minimal degree of edge modification in the form of small, irregular flake detachment. Modification is probably due to use or intentional working but could be the result of other causes, such as excavation damage, natural forces, plowing, etc.

Systematically Modified Flakes

Flakes that fall into this category exhibit evidence of purposeful chipping intended to produce a working edge which may take the form of an acute tip, notch or an excurvate, incurvate or straight edge.

Acute Tipped Modified Flakes

16 specimens
Type Category: 31/341221

METRICS:
Weight 2 - 73 g (avg. 12.1g)

DESCRIPTION: Artifacts of this type exhibit an acute, sharp protrusion formed by the removal of small flakes from either the dorsal or ventral side of a flake. The morphology of the tip and size of the flake varies. In this collection they are thick and exhibit little systematic flaking. They may have been used as piercing tools or possibly gravers.

Notched Modified Flakes

28 specimens
Type Category: 311231

METRICS:
Weight 2 - 33g (avg. 10.5g)

DESCRIPTION: Flakes in this category are systematically chipped on one edge to produce a shallow incurvate working edge. Woodworking is the assumed function for this type of tool.

Excurvate Edged Modified Flakes

61 specimens
Type Category: 31/341251

METRICS:
Weight less than 1 - 61g (avg. 14.2g)

DESCRIPTION: These flakes exhibit a convex chipped area on one or more edges.

Incurvate Edged Modified Flakes

35 specimens
Type Category: 311261

METRICS:
Weight less than 1 - 70g (avg. 12.6g)

DESCRIPTION: Flakes in this category are modified on one or more edges to produce an incurvate working edge. These differ from the notched modified flakes in that the worked area is considerably wider.

Straight Edged Modified Flakes

87 specimens
Type Category: 31/341271

METRICS:
Weight less than 1 - 52g (avg. 9.0g)

DESCRIPTION: These flakes exhibit a straight edge which has been systematically retouched.

Unifacially Chipped Tools

Unifacially chipped tools are characterized by systematic flake detachment from one surface of a piece of chert. They are generally produced on flakes but these may vary considerably in size and thickness. Such tools are generally assumed to be used for scraping tasks but other functions may also be served by them. This broad category is not well-represented in the site collection. Specimens belonging to the category do not generally exhibit the careful flaking often found in other assemblages containing unifaces. Based on form and angle of worked edge, three types, each encompassing two varieties, were identified. Miscellaneous fragments which are not identifiable as to specific type were also recorded.

Uniface Fragments

11 specimens
Type Category: 341300

METRICS: None Taken

DESCRIPTION: These specimens are characterized by a unifacially chipped edge but are too fragmentary to assess their original shape or characteristics of the working edge.

Ovate Unifaces (Circumferential Shallow Retouch)

Figure VI-7
3 specimens (1 fragmentary, 2 intact)
Type Category: 31/341311

METRICS:

Weight	36g	21g	
Length	52mm	33mm	66mm
Width	46mm	40mm	41mm
Thickness	17mm	15mm	13mm

DESCRIPTION: These specimens exhibit retouch around the entire perimeter of the piece. The working edge is shallowly bevelled. One specimen is unifacially worked on alternate edges, that is, flakes were removed from opposite faces at opposite ends. All specimens conform to a roughly ovate form.

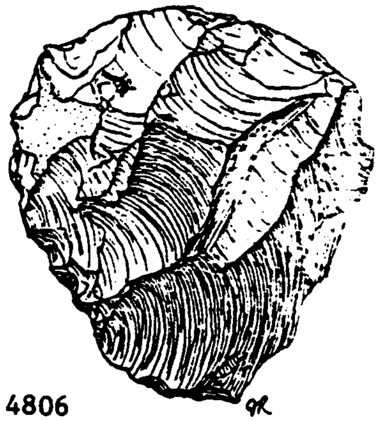
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Figure VI-7. Ovate Uniface (Circumferential Shallow Retouch)

Ovate Unifaces (Circumferential Steep Retouch)

2 fragmentary specimens
Type Category: 341312

METRICS:

Weight	nt	nt
Length	nt	25mm
Width	21mm	nt
Thickness	19mm	6mm

DESCRIPTION: These specimens are both rather small and suffer from heat damage and a longitudinal fracture, respectively. The platform end of a flake has been retouched most heavily although the sides also are unifacially flaked.

Ovate Unifaces (Shallow Side Retouch)

3 intact specimens
Type Category: 311313

METRICS:

Weight	16g	24g	63g
Length	56mm	51mm	81mm
Width	23mm	28mm	47mm
Thickness	16mm	19mm	15mm

DESCRIPTION: These specimens share the following characteristics: all are retouched on a side and all retain cortex or a weathered surface opposite the working edge which may have served to protect the hand during use. One specimen is larger than the others and has a plano-convex cross section. Its terminal ends are also more rounded. The other two specimens have triangular cross sections and trend toward being bipointed.

Ovate Uniface (Steep Side Retouch)

1 intact specimen
Type Category: 311314

METRICS:

Weight	60g
Length	74mm
Width	25mm
Thickness	34mm

DESCRIPTION: This specimen is somewhat similar to the above category except retouch is steeper. Weathered and cortical surfaces are minimally present. Cross section is triangular.

Ovate Uniface (Steep End Retouch)

2 specimens (1 fragmentary, 1 intact)
Type Category: 31/341316

METRICS: (taken on one specimen)

Weight	13g
Length	32mm
Width	35mm
Thickness	11mm

DESCRIPTION: These specimens both exhibit steep end retouch and both are made on flakes. The intact specimen is nearly as long as it is wide (orientation: the platform of the flake is at the top) but the other specimen, which is severely heat damaged, is more elongated and narrows toward the striking platform. Retouch is on the termination end of the flake.

Triangular Uniface (Circumferential Shallow Retouch)

1 intact specimen
Type Category: 311341

METRICS:

Weight	15g
Length	47mm
Width	24mm
Thickness	13mm

DESCRIPTION: This specimen is made on a flake. It is rather thick for its overall size and has a trapezoidal cross section. Although shallowly retouched around its entire perimeter, its primary working edge is probably the end and possibly the sides. The "working end" is at the termination end of the flake opposite the striking platform.

Triangular Uniface (Shallow Side Retouch)

Figure VI-8
1 intact specimen
Type Category: 311343

METRICS:

Weight	43g
Length	63mm
Width	39mm
Thickness	20mm

DESCRIPTION: This specimen appears to have been made from a core or a fragment of a core. It is irregularly triangular in shape with an acute apex, a flat side facet and a rounded opposite edge from the apex to the base. A portion of the rounded side has been shallowly retouched into a working edge. The tool was probably hand-held for use.

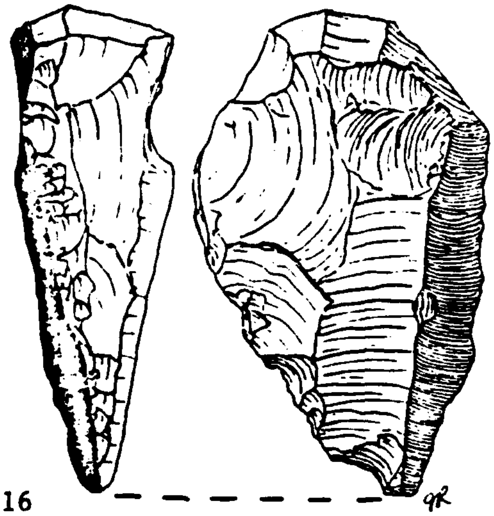

Figure VI-8. Triangular Uniface (Shallow Side Retouch)

Triangular Uniface (Steep Side Retouch)

1 intact specimen
Type Category: 311344

METRICS:

Weight	71g
Length	75mm
Width	40mm
Thickness	30mm

DESCRIPTION: This specimen also appears to have been made from a core. It is much more regularly triangular in shape and cross section than the preceding specimen. One facet is a weathered fracture plane. Cortex is minimally retained on an adjacent facet. The working edge is chipped along an edge of the third side facet. The steepness of the retouching is a function of the shape of the piece and the nearly equilateral dimensions of its triangular cross section.

Quadrilateral Uniface (Circumferential Steep Retouch)

Figure VI-9
2 intact specimens
Type Category: 311372

METRICS:

Weight	13g	13g
Length	51mm	53mm
Width	20mm	18mm
Thickness	10mm	11mm

DESCRIPTION: These artifacts are unique among the general types of unifaces from the site. They exhibit a purposefully manufactured quadrilateral form. Both have battered lateral edges as evidenced by multiple hinge fractures. One end of each tool is not flaked and cortex is present on both specimens. The medial portion of one specimen is slightly strangulated. This piece is also thicker in cross section.

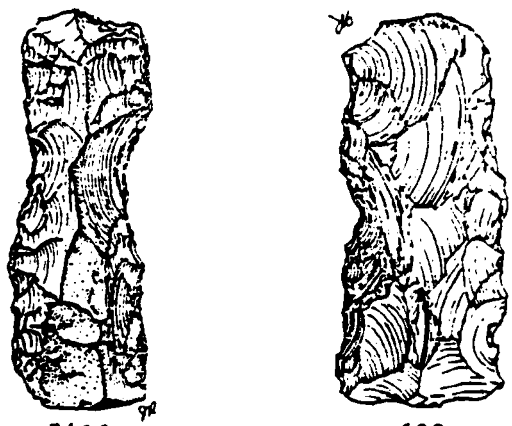

Figure VI-9. Quadrilateral Unifaces (Circumferential Steep Retouch)

Quadrilateral Uniface (Steep Side Retouch)

2 intact specimens
Type Category: 311374

METRICS:

Weight	87g	24g
Length	59mm	39mm
Width	54mm	30mm
Thickness	10mm	11mm

DESCRIPTION: These specimens are roughly quadrilateral in shape but their form is not a result of purposeful manufacture. The working edge is steeply beveled and is located on one of the longer sides. Both retain cortex on portions of the surface. In the case of the smaller specimen, cortex may have served as a backing for hand-held tool use.

Tools with Unifacial and Bifacial Modification

Specimens included under this grouping are called "uniface-bifaces" because, while they conform most closely to unifacially chipped forms, they also include bifacial retouching on some portions.

Quadrilateral Uniface-Biface (Circumferential Shallow Retouch)

1 intact specimen
Type Category: 319371

METRICS:

Weight	22g
Length	45mm
Width	35mm
Thickness	12mm

DESCRIPTION: This specimen falls into the transitional stage characteristic of an artifact which is a uniface as far as shape, cross section, and beveled working edge are concerned; but has minimal chipping on the flat, normally unmodified surface. The end opposite the working edge is somewhat concave, suggestive of a negative flake scar; however, it is possible that the piece once had an acute termination which has since snapped off and left a quadrilateral shape. In any event, the opposite end was probably used for scraping tasks.

Quadrilateral Uniface-Biface (Steep End Retouch)

1 intact specimen
Type Category: 319376

METRICS:

Weight	17g
Length	50mm
Width	30mm
Thickness	10mm

DESCRIPTION: This specimen is roughly quadrilateral although its rounded edges place it near the ovate form. It is manufactured from a flake with a thin platform and thick termination. The steep retouch in the medial section suggests that this specimen may have been hafted.

Uniface-Biface Fragments

2 specimens
Type Category: 349300

METRICS: Not taken

DESCRIPTION: These specimens are fragments which are indeterminate as to original morphology but resemble the "uniface-biface" grouping treated above. One specimen exhibits two facets which may be either weathered surfaces or internal fracture places which split off from a large piece. The other specimen appears to have sheared off from a larger piece on which bifacial chipping had not been performed on all surfaces.

Bifaces

At the primary flaking stage, bifaces have been generally shaped but may exhibit minimal edge retouch. These artifacts may be finished tools but many were intended for further reduction through secondary flaking techniques. As such, some of these bifaces probably functioned as "preforms" or "blanks."

Biface categories described in this collection include a variety of ovate or triangular forms as well as fragments. Metrics were taken on complete or nearly complete specimens but not on the smaller fragments.

Biface Fragment (Midsection)
32 specimens (4 Fragmentary Aborted, 28 Broken)
Type Categories: 33/344900

Biface Fragment (Straight Base, Angular Corners)
1 specimen
Type Category: 344901

Biface Fragment (Straight Base, Rounded Corners)
19 specimens
Type Category: 344902

Biface Fragment (Round Base)
23 specimens
Type Category: 344903

Biface Fragment (Indeterminate Base)
70 specimens (1 Fragmentary Aborted, 69 Fragmentary)
Type Categories: 33/344910

Biface Fragment (Tips and Corners)
48 specimens (1 Fragmentary Aborted, 47 Fragmentary)
Type Category: 33/344940

DESCRIPTION: These specimens could only be generally typed since they were too fragmentary to place in other biface categories. In a few isolated cases, breakage was due to manufacturing error; however, for the most part, the reason for breakage was not discernible. These fragments probably relate to the intact bifaces for which shape and basal distinctions are more readily discernable. The remaining bifaces are intact or sufficiently complete for an identification of their form.

Ovate Bifaces

The ovate bifaces are all typed on the basis of general shape and further subdivided on basal distinctions. It is often difficult to place bifaces within shape categories such as ovate, triangular, etc., because so many subtle variations are possible during the reductive process. A collection of bifaces often forms a continuum of shapes rather than easily discernable, mutually exclusive categories. In general, a biface is placed within the ovate class if the blade edges are convex and if the tip is more blunt than acute. Six categories of ovate bifaces are recognizable. All of these except for one (hoes) are morphologically defined. Hoes represent a functional category which is a departure from the technological/morphological basis of this typology; however, since similar specimens are commonly identified in the archaeological literature, an exception has been made.

Ovate Biface (Straight Base, Angular Corners)

1 specimen (intact, aborted)
Type Category: 324911

METRICS:

Weight	26g
Length	48mm
Width	31mm
Thickness	16mm

DESCRIPTION: This specimen was abandoned during manufacture when material flaws in the chert caused controlled longitudinal fractures. The cross section is plano-convex, giving the piece a "humpbacked" appearance.

Ovate Biface (Straight Base, Rounded Corners)

5 specimens (2 intact, 2 intact aborted, 1 fragmentary)
Type Categories: 31/32/344912

METRICS:

Weight	70g	64g	39g	29g	nt
Length	55mm	55mm	81mm	56mm	97mm
Width	40mm	42mm	50mm	31mm	43mm
Thickness	24mm	27mm	14mm	12mm	25mm

DESCRIPTION: These specimens are ovate in form with carefully controlled chipping for most examples. The two intact aborted specimens exhibit less careful and systematic retouch and are substantially thicker. One of these specimens retains cortex on a small portion of each surface. The broken specimen was abandoned when an internal material flaw caused a large portion of the base and blade to become detached. The intact specimens are very similar in general form; however, the smaller specimen has a less acute tip and an extant striking platform at its base while the other specimen is larger, more acutely tipped and exhibits more basal retouch.

Ovate Biface (Rounded Base)

Figure VI-10
18 specimens (3 intact, 10 intact aborted, 4 fragmentary, 1 fragmentary aborted)
Type Categories: 31/32/33/344913

METRICS: (intact or aborted intact specimens only)

Weight	57g	44g	14g	19g	16g	59g
Length	61mm	60mm	45mm	52mm	39mm	57mm
Width	48mm	40mm	28mm	24mm	15mm	36mm
Thickness	20mm	15mm	10mm	12mm	10mm	13mm

Weight	45g	27g	50g	19g	73g
Length	68mm	56mm	61mm	52mm	88mm
Width	38mm	34mm	46mm	21mm	40mm
Thickness	22mm	6mm	20mm	10mm	20mm

DESCRIPTION: Although morphologically, these specimens all share an ovate form and rounded base in common, at least two size classes appear to be represented. The larger class varies from approximately 60 mm to more than 80 mm in length. Depending on the length, the width ratio varies, the longer specimens appearing narrower, with the shorter ones tending toward a more circular form. The latter is transitional to the smallest specimens which show similar internal group variation as regards magnitude of convexity of blade edges. All of these specimens appear to be preforms of some type and many were disgarded during the manufacturing process. It is not clear if these were intended for projectile point manufacture; the larger specimens appear too large for most of the documented point styles; however, the smaller ones may have been intended for projectile point production. The more circular forms are vaguely reminiscent of the preforms used to produce broad point styles such as the Snyders (Monet-White 1968:42); however, no evidence exists to support that this specific technology was taking place and alternative hypotheses could easily account for this variation.

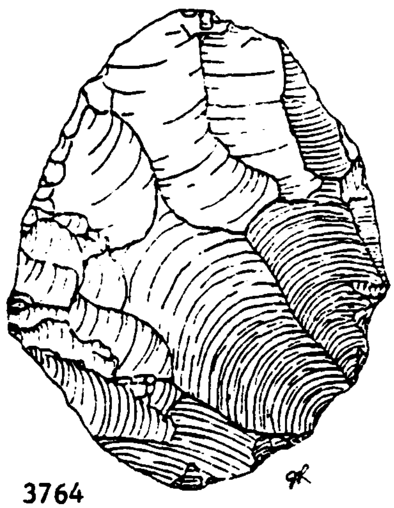
3764

Figure VI-10. Ovate Biface (Rounded Base)

Ovate Biface (Backed)

5 specimens (2 intact, 2 fragmentary, 1 fragmentary aborted)
Type Category: 31/33/344915

METRICS:

Weight	75g	64g	nt
Length	117mm	72mm	nt
Width	31mm	37mm	30mm
Thickness	26mm	16mm	14mm

DESCRIPTION: These are rather irregularly shaped specimens in which the knapper appears to have taken advantage of a cortical or weathered surface to form a backed edge. Presumably, these are tools meant for hand-held use. Retouch is not particularly fine or systematic although a definite working edge is discernible in all specimens.

Triangular Bifaces

Bifaces falling within this general category are very similar in many respects to ovate forms, varying only in the morphological shape of the piece. Basal distinctions have analogs in the ovate forms. A specimen is considered triangular if the blade edges are straight, nearly straight, or concave (although this is rare) and converge relatively rapidly to an acute tip. If the blade edges tend to be slightly convex, the acuteness of the tip may be used to make a final determination. Considerable variation may occur within this group for the same reasons as in any other shape category.

Triangular Biface (Straight Base, Angular Corners)

19 specimens (1 intact, 3 intact aborted, 4 fragmentary aborted, 11 fragmentary)
Type Categories: 31/32/33/344941

METRICS: (taken on intact specimens only)

Weight	17g	16g	21g	14g
Length	63mm	48mm	55mm	52mm
Width	26mm	19mm	22mm	28mm
Thickness	17mm	9mm	15mm	7mm

DESCRIPTION: These specimens vary in size but, on the whole, appear fairly similar. Attempts to thin the specimens are notable in most cases, suggesting that the final product was intended to be a well-thinned, triangular form whose length is substantially greater than its greatest width. A few specimens have been placed in categories denoting abandonment during manufacture because of either breakage due to material flaws or the presence of a large "knot" which prevented thinning. Specimens in the latter case are superficially similar to those described by Munson and Munson (1972) and are termed "hump-backed knives." They suggest that there is a specific variety of small knife dating to the late prehistoric period. The single specimen which best fits their description is a surface find; the others which exhibit a knot are considerably larger than the greatest metrical measurements given by Munson and Munson. However, there is a possibility that not all these bifaces are preforms.

Blade edges on the larger specimens tend to be more concave and a couple are near or within the transition to a more ovate shape; however the angle of convergence to the tip (reconstructed on most of the large specimens) is within an acceptable range for the triangular form.

Triangular Biface (Straight Base, Rounded Corners)

17 specimens (4 intact, 5 intact aborted, 2 fragmentary aborted, 6 fragmentary)
Type Categories: 31/32/33/344942

METRICS: (taken on intact specimens only)

Weight	20g	14g	43g	65g
Length	66mm	55mm	74mm	82mm
Width	36mm	26mm	37mm	43mm
Thickness	7mm	10mm	14mm	14mm
Weight	13g	21g	36g	63g
Length	46mm	60mm	63mm	77mm
Width	26mm	38mm	32mm	37mm
Thickness	10mm	9mm	13mm	24mm

DESCRIPTION: Three specimens are very similar to those described above except for the more rounded corners. Most of these specimens are fairly large and do not exhibit the higher breakage rate of the "hump-backed" type or have knots on their medial portions. The intent of the knapper, however, apparently was to thin the piece in most cases.

Triangular Biface (Rounded Base)

Figure VI-11
10 specimens (1 intact, 6 intact aborted, 3 fragmentary)
Type Category: 31/32/344943

METRICS: (taken on intact specimens only)

Weight	59g	24g	46g	45g
Length	71mm	67mm	66mm	80mm
Width	41mm	30mm	38mm	36mm
Thickness	20mm	13mm	22mm	16mm
Weight	64g	32g	9g	
Length	83mm	63mm	44mm	
Width	47mm	33mm	26mm	
Thickness	16mm	20mm	7mm	

DESCRIPTION: These bifaces tend to be quite large except for two (1 intact, 1 broken) which are 45 cm or less in length. Chipping varies on the specimens but, in most cases, it does not impart a "smooth," even surface. Only one appears carefully and systematically chipped. The presence of a hump or knot similar to those described above is essentially lacking.

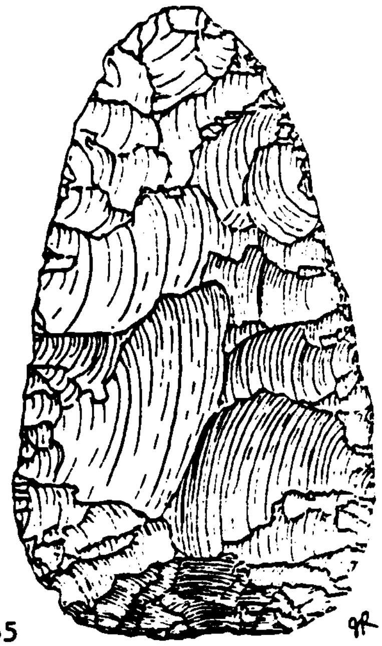

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Figure VI-11. Triangular Biface (Rounded Base)

Hoe

Figure VI-12
3 specimens
Type Category: 314914

METRICS:

Weight	127g	400g	232g
Length	88mm	70mm	95mm
Width	60mm	86mm	66mm
Thickness	20mm	22mm	18mm

DESCRIPTION: These specimens can be readily divided into two types. The smallest one is a chipped chert ovate form with a slightly convex base, angular corners, a broad distal end (almost squared off) and exhibits a high degree of polish over much of its medial portion cn both faces. The other two are made from larger pieces of highly weathered chert. Both are essentially ovate in form; however, one is longer and narrower than the other. Only minimal flaking had modified them from this natural form. Over one-third of the length of the longer, narrower specimen is unmodified and converges to an acute point. Relict cortex is common to both specimens.

Figure VI-12. Hoe

Bipointed Biface

2 specimens: (1 intact, 1 fragmentary)
Type Category: 31/344980

METRICS:

Weight	40g	nt
Length	80mm	nt
Width	21mm	22mm
Thickness	18mm	21mm

DESCRIPTION: These specimens are atypical examples within the biface collection. They are elongated, quite narrow relative to their length and have a triangular or trapezoidal cross section. They do not exhibit particularly careful or systematic chipping; however, they do appear to be tools of some kind.

Reductive Stage IV - Secondary Flaking

This stage includes the final modifications and finishing of forms produced in previous stages. Thinning, bevelling, edge straightening, serration and preparation of a haft are among the techniques employed to produce a final tool form. Major categories within this stage include unhafted and hafted bifaces and bifacially chipped fragments. Metrics are given when possible. The letters "nt" have been used to designate measurements not taken and "nm" not measurable.

Biface Fragments (Midsection)
44 specimens
Type Category: 444900

Biface Fragments (Straight Base, Angular Corners)
25 specimens
Type Category: 444901

Biface Fragment (Straight Base, Rounded Corners)
1 specimens
Type Category: 444902

Biface Fragments (Round Base)
8 specimens
Type Category: 444903

Biface Fragments (Indeterminate Base)
5 specimens
Type Category: 444910

Biface Fragments (Tips and Corners)
90 specimens
Type Category: 444940

DESCRIPTION: These fragments exhibit bifacial chipping, but are too fragmentary to place into more specific biface categories. The basal fragments vary considerably in size and, if more complete, could possibly be placed within both hafted and unhafted biface categories.

Unhafted Bifaces

Artifacts belonging to this type represent both finished tools and projectile point preforms. In the latter case, the specimen is modified to the point where only the final notching or other alterations for hafting are lacking. For point styles which lack specific modifications in the haft area, recognition of their preforms is usually more difficult.

Triangular Biface (Straight Base, Angular Corners)

Figure VI-13
7 specimens (2 intact, 1 intact aborted, 4 fragmentary)
Type Categories: 41/42/444941

METRICS:

Weight	23g	13g	6g	nt
Length	76mm	71mm	40mm	nt
Width	31mm	29mm	20mm	40mm
Thickness	11mm	9mm	8mm	7mm

Weight	nt	nt	nt
Length	nt	nt	nt
Width	18mm	24mm	30mm
Thickness	8mm	7mm	10mm

DESCRIPTION: These bifaces are morphologically similar to their analogs in the previous reductive stage in shape and basal distinctions. The smaller specimens probably were intended as projectile point preforms. The large specimens appear more likely to have served as finished tools such as knives. They are carefully chipped and impart a "finished" look. One suffered a transverse fracture which snapped off probably the upper third of its length. One specimen is heat-damaged.


3346

Figure VI-13. Triangular Biface (Straight Base, Angular Corners)

Triangular Bifaces (Straight Base, Rounded Corners)

6 specimens (2 fragmentary aborted, 4 fragmentary)
Type Categories: 43/44942

METRICS:

Weight	nt	nt	nt	nt	nt	nt
Length	nt	nt	nt	nt	nt	nt
Width	22mm	12mm	34mm	25mm	30mm	25mm
Thickness	34mm	11mm	11mm	10mm	10mm	8mm

DESCRIPTION: All the specimens in this type are broken; however, basal similarities are strong for all examples. Blade edges are straight to slightly convex in all but one specimen which has more concave edges.

Triangular Biface (Rounded Base)

1 fragmentary specimen
Type Category: 444943

METRICS:

Weight	nt
Length	56mm
Width	22mm
Thickness	8mm

DESCRIPTION: A basal corner has snapped off this specimen but a sufficient portion of the base is retained so that the artifact can be placed within this type. Attempts at serration are evident on a portion of the broken edge.

Triangular Biface (Incurvate Base)

1 fragmentary specimen
Type Category: 444947

METRICS:

Weight	nt
Length	nt
Width	30mm
Thickness	7mm

DESCRIPTION: This specimen exhibits careful and systematic chipping which has produced smooth blade edges and a regularly incurvate base. A transverse fracture accounted for the loss of up to half of its length. It may have been intended as a preform for a style such as Candy Creek.

Lanceolate Biface 6

Figure VI-14
6 specimens (1 intact, 5 fragmentary)
Type Categories: 41/444993

METRICS:

Weight	18g	nt	nt	nt	nt
Length	74mm	nt	nt	nt	nt
Width	25mm	22mm	22mm	22mm	21mm
Thickness	7mm	7mm	7mm	6mm	9mm
Haft Length	19mm	20mm	19mm	17mm	nt
Max. Haft Width	25mm	22mm	22mm	24mm	22mm
Min. Haft Width	20mm	20mm	20mm	22mm	22mm

MORPHOLOGY: Blade --parallel sided, the complete specimen is excurvate on one side; Cross Section --two are flattened, three are bioconvex; Shoulder --not present; Haft --grinding along the lateral edges varies from 17 to 20 mm beginning at the base; base is thinned and ground.

COMPARISONS: Faulkner and McCullough (1973:96, 217) include this type in th McFarland Cluster which is dated to the Middle Woodland.

COMMENTS: The complete specimen is crude and perhaps was aborted during manufacture. Specimen 1625 exhibits wear along the lateral edges.

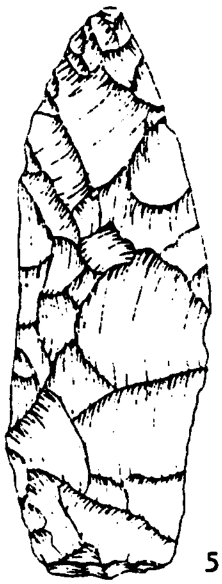

5776

Figure VI-14. Lanceolate Biface 6

Hafted Bifaces

Because the function of many hafted bifaces is unknown and a use-wear study was not conducted for this analysis, the traditional functional types of projectile points, knives and drills are subsumed under this broad classification. Evidence of use, though not systematically documented in this assemblage, was noted for each type of tool.

A variety of subtypes are included under the general heading of hafted bifaces. These include: 1) projectile point fragments; 2) straight stemmed projectile points; 3) expanding stemmed projectile points; 4) bifurcated base projectile points; 5) contracting stemmed projectile points; 6) side-notched projectile points; 7) lanceolate projectile points; 8) triangular projectile points; and 9) drills.

Projectile Point Fragments

Blade Fragments
9 specimens
Type Category: 442000

COMMENTS: One of these is serrated and probably belongs to the Kirk projectile point variety; however, the haft is missing. All the rest are indeterminate as to type.

Stem Fragments
14 specimens
Type Category: 442010

COMMENTS: Five specimens are probably from weakly side-notched points with straight or convex bases. One appears to be from some type of "eared" lanceolate point. Three appear to be strongly side-notched. One has a strongly incurvate base. Two appear to be from contracting stem points and the remaining two from bifurcates.

Stem and Shoulder Fragment
1 specimen
Type Category: 442020

COMMENTS: This appears to be from some type of lanceolate point with minimal haft modifications.

Stem, Shoulder and Blade Fragments
10 specimens
Type Category: 442030

COMMENTS: Although a portion of the hafting area is retained on these specimens, enough is missing to render identification of type rather tentative. Four are completely unidentifiable. Two are posssibly contracting stem but the basalmost portions of these are missing. One is a corner-notched triangular blade. One has a moderately weak side notch with a slightly concave base. One appears to be broadly straight stemmed but the basal portion is largely missing. One is a moderately expanding stem point which is badly damaged. It may be a Wade point.

Straight Stemmed Projectile Points

Straight Stem 1 (McWhinney-like)
1 intact, 1 fragmentary specimens
Figure VI-15
Type Categories: 41/442211

METRICS:

Weight	14g	nt
Length	56mm	nt
Width	26mm	29mm
Thickness	10mm	10mm
Haft Length	15mm	15mm
Max. Haft Width	15mm	16mm
Min. Haft Width	15mm	nt

MORPHOLOGY:

<u>Blade</u> --triangular with excurvate sides; rounded tip on one specimen; <u>Cross Section</u> --bioconvex; <u>Shoulder</u> --moderate, tapering; <u>Haft</u> --straight stem with straight base and rounded corners; one specimen has a cortical base; neither are well-thinned.

COMPARISONS: These specimens resemble the McWhinney style defined by Vickery (1972) for which a second millenium B.C. date is suggested.

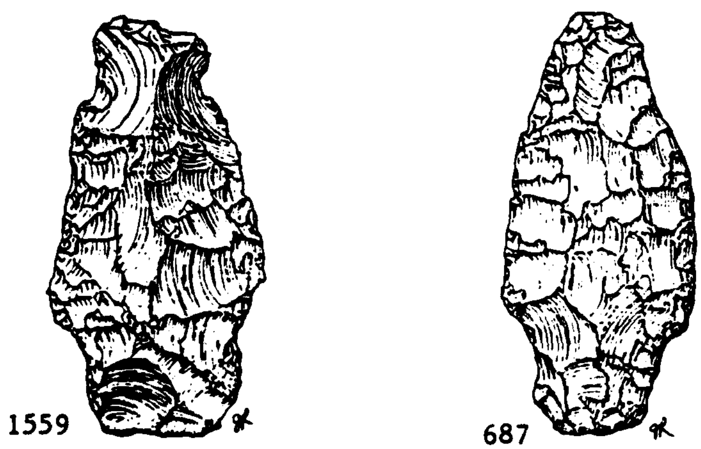


Figure VI-15. Straight Stem 1 (McWhinney-like)

Straight Stem 5 (Unnamed)
1 intact, 4 fragmentary specimens
Figure VI-16
Type Category: 41/442215

METRICS:

Weight	10 g	nt	nt	nt	nt
Length	52 mm	nt	nt	nt	nt
Width	23 mm	25 mm	26 mm	27 mm	21 mm
Thickness	8 mm	11 mm	13 mm	7 mm	10 mm
Haft Length	13 mm	15 mm	16 mm	11 mm	16 mm
Max.Haft Width	15 mm	14 mm	13 mm	12 mm	13 mm
Mix.Haft Width	13 mm	13 mm	13 mm	12 mm	10 mm

MORPHOLOGY: Blade -- lanceclate; straight to excurvate lateral edge; thick and crude; Cross Section -- biconvex; Shoulder -- weak, tapered; Haft -- straight to contracting stem; bases are rounded (except on one possibly damaged specimen) and unthinned.

COMPARISONS: No suitable comparisons were found in the literature.

COMMENTS: In general, they are unidentified, crude, straight to contracting stem tools exhibiting poor workmanship. The fact that they all have broken tips suggests they were finished tools and that the breakage probably occurred with use.


2079

Figure VI-16. Straight Stem 5 (Unnamed)

Straight Stem 15 (Montgomery Stemmed)

Figure VI-17
2 fragmentary specimens
Type Category: 442218

METRICS:

Weight	nt	nt
Length	nt	nt
Width	46 mm	29 mm
Thickness	8 mm	8 mm
Haft Length	16 mm	16 mm
Max.Haft Width	18 mm	15 mm
Min.Haft Width	16 mm	14 mm

MORPHOLOGY: Blade --triangular with slightly excurvate or straight sides; sinuous on one specimen; Cross Section --flattened bioconvex; Shoulder --well-defined but tapering to stem; Haft --essentially straight stem with a straight to slightly excurvate base; one specimen has a cortical base; lateral grinding on stem.

COMPARISONS: Early Woodland specimens of this type have been associated with the Adena complex at the Wright Mound and in the Red River Gorge (Cowan 1975:127).

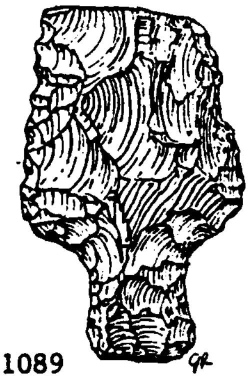

1089

Figure VI-17. Straight Stemmed 15 (Montgomery Stemmed)

Straight Stem 17 (Unnamed)

2 intact, 2 fragmentary specimens
Figure VI-18
Type Categories: 41/442234

METRICS:

Weight	nt	5 g	5 g	nt
Lenght	nt	37 mm	42 mm	nt
Width	25 mm	25 mm	21 mm	24 mm
Thickness	8 mm	9 mm	9 mm	7 mm
Haft Length	12 mm	14 mm	8 mm	11 mm

Max.Haft Width	15 mm	13 mm	11 mm	12 mm
Min.Haft Width	15 mm	13 mm	11 mm	12 mm

MORPHOLOGY: <u>Blade</u> -- triangular; straight to slightly excurvate lateral edges; <u>Cross Section</u> -- two points are biconvex; one is plano-convex; <u>Shoulder</u> -- tapered, well-defined; <u>Haft</u> -- straight stem; straight or slightly excurvate base; no grinding apparent.

COMPARISONS: This type was reported by Sorensen et al. (1980:76-77) in Central Kentucky as a new form. Its chronological position in the Highland Rim of north-central Tennessee remains unknown.

1333

Figure VI-18. Straight Stem 17 (Unnamed)

Straight Stem 19 (Ledbetter)

1 intact, 3 fragmentary specimens
Figure VI-19
Type Categories: 41/442236

METRICS:

Weight	41 g	nt	nt	nt
Length	79 mm	nt	nt	nt
Width	36 mm	37 mm	33 mm	37 mm
Thickness	17 mm	13 mm	17 mm	18 mm
Haft Length	24 mm	15 mm	19 mm	7mm
Max.Haft Width	24 mm	20 mm	32 mm	18 mm
Min.Haft Width	15 mm	17 mm	21 mm	15 mm

MORPHOLOGY: <u>Blade</u> -- large triangular; recurvate on lateral edge, excurvate on the other; <u>Cross Section</u> -- biconvex; thick; <u>Shoulder</u> -- weak; narrow; <u>Haft</u> -- straight to contracting stem; base is unfinished on two specimens and cortex is evident, third specimen has a thinned, partially ground base.

COMPARISONS: These specimens are comparable to the Ledbetter type discussed by Kneburg (1956), Bell (1960) and Cambron and Hulse (1975). The illustrated Ledbetter is very similar to the variants exhibited by Lewis and Lewis (1961:32:b,c).

COMMENTS: Numerous hinge fractures occur on both faces of two specimens.

6090

Figure VI-19. Straight Stem 19 (Ledbetter)

Straight Stem 26

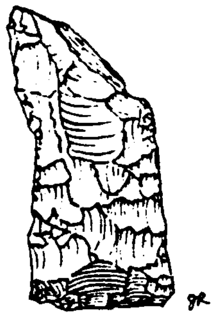
1 fragmentary specimen
Figure VI-20
Type Category: 442243

METRICS:

Weight	nt
Length	nt
Width	nt
Thickness	8 mm
Haft Length	25 mm
Max. Haft Width	17 mm
Min. Haft Width	16 mm

MORPHOLOGY: Blade -- form not reconstructable; Cross Section -- unknown; Shoulder -- very slight and tapering; Haft -- essentially straight, long stem with a slight expansion on straight basal edge.

COMPARISONS: This stem fragment is very similar to a reworked specimen found at Site 15CK119 in Clark County, Kentucky; however, no date is known for it.



1848

Figure VI-20. Straight Stem 26

Straight Stem 27 (Wade)

1 intact, 2 fragmentary,
1 fragmentary aborted specimen
Figure VI-21
Type Categories: 41/43/442244

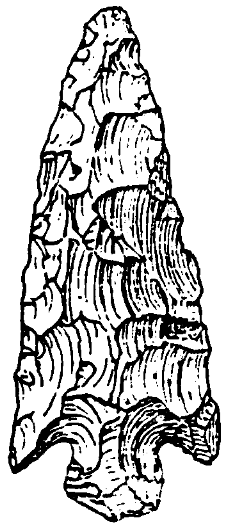
METRICS:

Weight	15 g	nt	nt	nt
Length	67 mm	nt	nt	nt
Width	28 mm	41 mm	31 mm	nt
Thickness	11 mm	11 mm	8 mm	7 mm
Haft Length	10 mm	11 mm	10 mm	11 mm
Max.Haft Width	14 mm	19 mm	12 mm	15 mm
Min.Haft Width	13 mm	16 mm	12 mm	15 mm

MORPHOLOGY: <u>Blade</u> -- straight, lateral edges; triangular shape; <u>Cross Section</u> -- biconvex or flattened; <u>Shoulder</u> -- barbed; <u>Haft</u> -- straight to slightly expanded stem results from the corner notching; all bases are straight, one is thinned and ground.

COMPARISONS: Cambron and Hulse (1975:122) suggest a Late Archaic through Middle Woodland association for this type in Tennessee and Alabama.

COMMENTS: Three of the four specimens have broken blades, one was broken during manufacture.



6126

Figure VI-21. Straight Stem 27 (Wade)

Straight Stem 28 (Little Bear Creek)

1 fragmentary specimen
Figure VI-20
Type Category: 442245

METRICS:

Weight	nt
Length	nt
Width	31 mm
Thickness	7 mm
Haft Length	20 mm
Max.Haft Width	17 mm
Min.Haft Width	15 mm

MORPHOLOGY: Blade -- triangular; excurvate on one lateral edge, straight on the other; straight edge exhibits use-wear near the distal end; Cross Section -- biconvex; Shoulder -- straight on one side, tapered on the other; Haft -- straight stem is ground on lateral edges and base.

COMPARISONS: This specimen conforms to illustrated examples of Little Bear Creek by DeJarnette et al. (1962:61) and Cambron and Hulse (1975:82). The latter suggests Late Archaic to Late Woodland (circa 4,000-1,500 B.P.) association.

COMMENTS: This specimen has broad, deep flake scars and numerous hinge fractures.

105

Figure VI-22. Straight Stem 28 (Little Bear Creek)

Straight Stem 29

1 fragmentary specimen
Figure VI-23
Type Category: 442246

METRICS:

Weight	nt
Length	nt
Width	22 mm
Thickness	8 mm
Haft Length	12 mm
Max.Haft Width	15 mm
Min.Haft Width	15 mm

MORPHOLOGY: Blade -- parallel sided, narrow; Cross Section -- biconvex; Shoulder -- narrow; tapered; Haft -- straight stem; slightly rounded base and corners.

COMPARISONS: This specimen resembles the Late Archaic Pontchartrain type (Perino 1968:70-71) but lacks the large serrations, median ridge and high quality craftmanship.

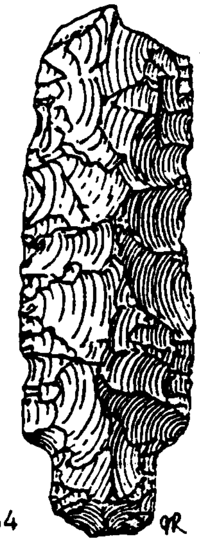


Figure VI-23. Straight Stem 29 (Unnamed)

Straight Stem 30 (Coosa)

1 fragmentary specimen
Figure VI-24
Type Category: 442247

METRICS:

Weight	nt
Length	32 mm
Width	nt
Thickness	5 mm
Haft Length	8 mm
Max.Haft Width	nt
Min.Haft Width	nt

MORPHOLOGY: Blade -- triangular; excurvate lateral edges with fine serrations; Cross Section -- biconvex; Shoulder -- straight to slightly tapered; Haft -- straight to contracting; fine retouch along base.

COMPARISONS: This specimen conforms to the Coosa type described by Cambron and Hulse (1975:29) and is considered to be Middle Woodland. Lewis and Kneberg (1957) obtained a radiocarbon date of 2050+/-250 years B.P. for the Camp Creek Site where the point was first observed.

2956

Figure VI-24. Straight Stem 30 (Coosa)

Straight Stem 32

1 intact specimen
Figure VI-25
Type Category: 412249

METRICS:

Weight	5 g
Length	34 mm
Width	20 mm
Thickness	8 mm
Haft Length	14 mm
Max.Haft Width	14 mm
Min.Haft Width	14 mm

MORPHOLOGY: <u>Blade</u> -- triangular form with excurvate edges; rather roughly chipped with a knot on one face and irregular edge retouch along one side; <u>Cross Section</u> -- flattened biconvex; <u>Shoulder</u> -- slight; tapering; <u>Haft</u> -- straight, broad stem with an essentially straight base; round basal corners; basal edge exhibits remnant of striking platform.

COMPARISONS: A similar point was collected by Chapman (1978:94) during subsurface testing at Site 40MR86. The point was recovered from a zone believed to date to the Late Archaic/Early Woodland.

1131

Figure VI-25. Straight Stem 32

Straight Stem (Unidentified)

1 fragmentary specimen
Type Category: 442200

METRICS:

Weight	nt
Length	nt
Width	24 mm
Thickness	7 mm
Haft Length	14 mm
Max. Haft Width	16 mm
Min. Haft Width	15 mm

MORPHOLOGY: Blade -- missing; Cross Section -- biconvex; Shoulder -- tapering; Haft -- slightly incurvate base which is damaged; straight sides; unground.

Expanded Stemmed Projectile Points

Expanded Stem 1 (Kirk-like)

1 fragmentary specimen
Figure VI-26
Type Category: 442311

METRICS:

Weight	nt
Length	nt
Width	32 mm
Thickness	8 mm
Haft Length	11 mm
Max.Haft Width	25 mm
Min.Haft Width	19 mm

MORPHOLOGY: Blade -- probably triangular, broken; Cross Section -- biconvex; Shoulder -- prominent barbs, slightly expanded; Haft -- expanded stem formed by deep diagonal notches; base is incurvate due to removal of broad deep flake and heavily ground.

COMPARISONS: This fragment is identical to the Kirk variant reported by Boisvert et al. (1979:149-150) and is considered Early Archaic.

3137

Figure VI-26. Expanded Stem 1 (Kirk-like)

Expanded Stem 15 (Mud Creek)

3 whole, 1 fragmentary specimen
Figure VI-27
Type Categories: 41/442326

METRICS:

Weight	10 g	nt	11 g	9 g
Length	50 mm	nt	54 mm	47 mm
Width	25 mm	27 mm	30 mm	26 mm
Thickness	9 mm	9 mm	7 mm	10 mm
Haft Length	11 mm	13 mm	9 mm	10 mm
Max.Haft Width	19 mm	18 mm	16 mm	19 mm
Min.Haft Width	17 mm	18 mm	16 mm	17 mm

MORPHOLOGY: Blade -- triangular; excurvate lateral edges exhibit fine retouch; Cross Section -- biconvex; Shoulder -- straight to tapered; one specimen is rounded; Haft -- slightly expanded stem; straight base reveals minor thinning.

COMPARISONS: These points more closely resemble the Mud Creek type illustrated by DeJarnette et al. (1962:64) than the one illustrated by Cambron and Hulse (1975:94). However, their metrics are more in line with the latter. Both sources suggest a Late Archaic to Early Woodland affiliation.

1922

Figure VI-27. Expanded Stem 15 (Mud Creek)

Expanded Stem 16 (McIntire-like)

2 fragmentary, 1 fragmentary aborted specimens
Figure VI-28
Type Categories: 43/442334

METRICS:

Weight	nt	nt	nt
Length	nt	nt	nt
Width	23 mm	28 mm	nt
Thickness	8 mm	9 mm	6 mm
Haft Length	18 mm	18 mm	12 mm
Max.Haft Width	19 mm	22 mm	17 mm
Min.Haft Width	15 mm	18 mm	13 mm

MORPHOLOGY: Blade -- undetermined; Cross Section -- biconvex; Shoulder -- one specimen slightly barbed, the other is straight; Haft -- long expanding stem; base is slightly excurvate and thinned; one stem is rounded on base and stem edges.

COMPARISONS: These specimens vaguely resemble Type 80 points (Faulkner and McCullough 1973) from the Normandy Reservoir where they are considered terminal Archaic-Early Woodland. The Normandy type has a shorter hafting length than those presented here. They are also superficially similar to the McIntire type (Cambron and Hulse 1975:86) except that the shoulders are not as prominent as the specimen illustrated in Cambron and Hulse.

4640

Figure VI-28. Expanded Stem 16

Expanded Stem 25 (Flint Creek-like)

3 intact whole, 2 fragmentary specimens
Figure VI-29
Type Categories: 41/442335

METRICS:

Weight	9 g	7 g	6 g	nt	nt
Length	60 mm	44 mm	44 mm	nt	nt
Width	27 mm	22 mm	24 mm	24 mm	29 mm
Thickness	6 mm	7 mm	7 mm	7 mm	8 mm
Haft Length	12 mm	14 mm	14 mm	14 mm	13 mm
Max.Haft Width	13 mm	15 mm	13 mm	19 mm	16 mm
Min.Haft Width	12 mm	13 mm	11 mm	12 mm	14 mm

MORPHOLOGY: Blade -- triangular; excurvate lateral edges; Cross Section -- two biconvex, one plano-convex; Shoulder -- tapered; Haft -- base is excurvated and thinned with rounded corners.

COMPARISONS: These specimens are similar to the Flint Creek type (Cambron and Hulse 1975:51; Perino 1971:34-35) but lacks the serrations. A Late Archaic-Early Woodland association is suggested.

1238

Figure VI-29. Expanded Stem 25 (Flint Creek-like)

Expanded Stem 26 (Jacks Reef Corner Notched)

1 fragmentary specimen
Figure VI-30
Type Category: 442336

METRICS:

Weight	nt
Length	nm
Width	23 mm
Thickness	7 mm
Haft Length	11 mm
Max.Haft Width	20 mm
Min.Haft Width	14 mm

MORPHOLOGY: Blade -- triangular; excurvate lateral edges; Cross Section -- plano-convex; Shoulder -- slightly barbed, inversely tapered; Haft -- short, wide, sharply expanding stem; base is well-thinned.

COMPARISONS: This point conforms closely to Jacks Reef Corner Notched as defined by Ritchie (1961:26-27, plate 11 and 12). Cambron and Hulse (1975:76) relate this type to Knight's Island and suggest late Middle Woodland to Late Woodland affiliation.

3479

Figure VI-30. Expanded Stem 26 (Jacks Reef Corner Notched)

Expanded Stem 27 (Motley)

2 intact, 1 fragmentary specimens
Figure VI-31
Type Category: 41/442337

METRICS:

Weight	7 g	9 g	nt
Length	42 mm	50 mm	nt
Width	22 mm	26 mm	26 mm
Thickness	10 mm	10 mm	9 mm
Haft Length	11 mm	12 mm	12 mm
Max.Haft Width	18 mm	16 mm	22 mm
Min.Haft Width	13 mm	12 mm	15 mm

MORPHOLOGY: Blade -- triangular; straight lateral edges; Cross Section -- biconvex; Shoulder -- straight to inversely tapered; Haft -- expanding stem produced by removal of broad, deep corner notches; base is ground.

COMPARISONS: Cambron and Hulse (1975) place this type in the Archaic through the Early Woodland in the Lower Mississippi River Valley and Illinois. The type is morphologically and chronologically similar to projectile points typed as Normanskill by Ritchie (1961).

Figure VI-31. Expanded Stem 27 (Motley)

Expanded Stem 40 (Snyders)

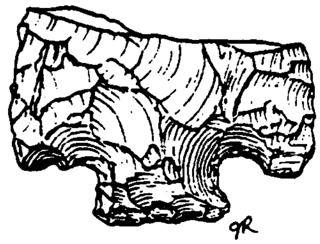
1 fragmentary specimen
Figure VI-32
Type Category: 412359

METRICS:

Weight	nt
Length	nt
Width	40 mm
Thickness	10 mm
Max.Haft Width	19 mm
Min.Haft Width	17 mm

MORPHOLOGY: Blade -- fragmentary; probably triangular with excurvate lateral edges; Cross Section -- biconvex; Shoulder -- rounded barbs inversely tapered; Haft -- expanded stem is short and relatively narrow compared to the blade; base is thinned and straight.

COMPARISONS: This specimen is similar in many respects to the Snyders type, particularly those illustrated by Montet-White (1968:72). It is a Middle Woodland type found over much of the Ohio and Mississippi River valleys.



5412

Figure VI-32. Expanded Stem 40 (Snyders)

Expanded Stem 69 (Palmer)

1 fragmentary specimen
Figure VI-33
Type Category: 442397

METRICS:

Weight	nt
Length	40 mm
Width	nt
Thickness	7 mm
Haft Length	10 mm
Max.Haft Width	21 mm
Min.Haft Width	16 mm

MORPHOLOGY: Blade -- triangular; straight and slightly serrated; acute tip; Cross Section -- biconvex; Shoulder -- well-defined barbs; Haft -- expanding stem produced by removal of deep corner notches; base is thinned, ground and slightly incurvate.

COMPARISONS: This specimen conforms to the Palmer type defined by Coe (1959). It is an Early Archaic form.

2658

Figure VI-33. Expanded Stem 69 (Palmer)

Expanded Stem 70 (Manker Corner Notched)

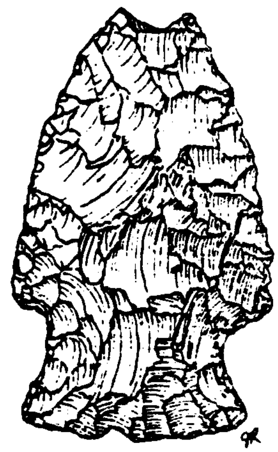
1 fragmentary specimen
Figure VI-34
Type Category: 442398

METRICS:

Weight	21 g	
Length	62 mm	(est.)
Width	31 mm	
Thickness	8 mm	
Haft Length	14 mm	
Max.Haft Width	24 mm	
Min.Haft Width	17 mm	

MORPHOLOGY: Blade -- triangular excurvate and slightly serrated lateral edges; Cross Section -- biconvex; Shoulder -- straight to slightly tapered; Haft -- removal of broad corner notches resulted in an expanded stem; base excurvate.

COMPARISONS: Montet-White (1968:73) identified the Manker type and considers it contemporaneous with the Middle Woodland Snyder point.



2179

Figure VI-34. Expanded Stem 70 (Manker Corner Notched)

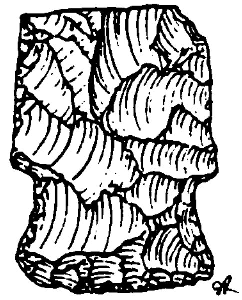
Expanded Stem 74 (Lowe)

1 fragmentary specimen
Figure VI-35
Type Category: 442516

METRICS:

Weight	nt
Length	nt
Width	27 mm
Thickness	5 mm
Haft Length	15 mm
Max. Haft Width	26 mm
Min. Haft Width	22 mm

MORPHOLOGY: Blade -- probably lanceolate with straight sides; Cross Section -- flattened biconvex; Shoulder -- well-defined; slightly tapering; Haft -- wide expanding stem with slightly excurvate edge. Width of basal edge nearly equal to maximum width of blade. The Lowe Expanded Stem point was defined by Winters from the lower Wabash Valley in Illinois (Winters 1967:90-93). This point type is found in association with La Motte and Allison cultures which are thought to be transitional from Middle to Late Woodland. The style is probably related to the Bakers Creek/Steuben type cluster.



3015

Figure VI-35. Expanded Stem 74 (Lowe)

Expanded Stem 84 (Manker Stemmed)

1 intact specimen
Figure VI-36
Type Category: 412526

METRICS:

Weight	12 g
Length	53 mm
Width	30 mm
Thickness	10 mm
Haft Length	15 mm
Max.Haft Width	25 mm
Min.Haft Width	25 mm

MORPHOLOGY: Blade -- triangular; one straight, one excurvate lateral edge; Cross Section -- biconvex; Shoulder -- weak; tapered; slightly angular; Haft -- sligatly expanded stem; base excurvate and slightly ground; one corner of base rounded, one angular.

COMPARISONS: This point compares well with the Manker Stemmed points described by Montet-White (1968) particularly those illustrated in Figure 29-1 and 2 and Figure 55-3. This point has been dated to the Middle Woodland in the Illinois Valley.

994

Figure VI-36. Expanded Stem 84 (Manker Stemmed)

Expanded Stem 85 (Lost Lake)

1 fragmentary specimen
Figure VI-37
Type Category: 442527

METRICS:

Weight	nt
Length	nt
Width	nt
Thickness	7 mm
Haft Length	nt
Max.Haft Width	nt
Min.Haft Width	nt

MORPHOLOGY: Blade --probably triangular; lateral edges are serrated and slightly recurvate; Cross Section -- flattened to slightly rhombiodal; Shoulder -- pronounced barbs which are rounded; Haft -- deep corner notching results in an expanded stem; base is ground.

COMPARISONS: Although badly damaged, this specimen closely resembles the Lost Lake type (Cambron and Hulse 1975:83; Perino 1968:50) and is probably Early Archaic in date.

4667

Figure VI-37. Expanded Stem 85 (Lost Lake)

Expanded Stem 94 (Unnamed)

1 fragmentary specimen
Figure VI-38
Type Category: 442536

METRICS:

Weight	nt
Length	nt
Width	27 mm
Thickness	9 mm
Haft Length	11 mm
Max.Haft Width	16 mm
Min.Haft Width	14 mm

MORPHOLOGY: Blade -- elongated triangular; parallel sided; Cross Section -- biconvex; Shoulder -- medium, tapered; Haft -- short expanded stem; slightly concave base.

COMPARISONS: This specimen resembles the Benton type as described by Lewis and Lewis (1961:36, plate 8-b) but lacks stem beveling. It also shares characteristics with the Rowlette type (Duffield 1966:66-69) but has a more pronounced shoulder and longer stem. The similarities between this point and the above two types suggest Middle to Late Archaic association.

COMMENTS: The upper one-third of the blade exhibits use-wear.

633

Figure VI-38. Expanded Stem 94 (Unnamed)

Expanded Stem 96

1 fragmentary specimen
Figure VI-39
Type Category: 442538

METRICS:

Weight	nt
Length	nt
Width	nt
Thickness	6 mm
Haft Length	10 mm
Max. Haft Width	20 mm
Min. Haft Width	12 mm

MORPHOLOGY: Blade -- broken; form not reconstructable; Cross Section -- flattened, biconvex; Shoulder -- probably rounded; Haft -- relatively narrow stem which flares to a wide expanding base. Basal edge is slightly excurvate.

COMPARISONS: This fragment is similar in its basal configuration to some of the Late Woodland points discussed by Perino (1971:plate 50).

3601

Figure VI-39. Expanded Stem 96

Expanded Stem 97

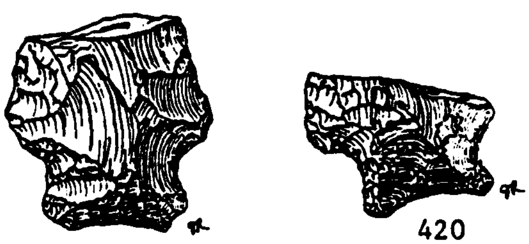
2 fragmentary specimens
Figure VI-40
Type Category: 442539

METRICS:

Weight	nt	nt
Length	nt	nt
Width	24 mm	nt
Thickness	7 mm	11 mm
Haft Length	11 mm	10 mm
Max. Haft Width	18 mm	18 mm
Min. Haft Width	16 mm	17 mm

MORPHOLOGY: Blade -- probably triangular; broken off near stem on both specimens; Cross Section -- biconvex; Shoulder -- slight; tapering; Haft -- slightly expanding stem with thinned, incurvate basal edges. Both specimens have been ground along the basal edge.

COMPARISONS: No comparable named types were found in the literature.



420

Figure VI-40. Expanded Stem 97

Expanded Stem 98

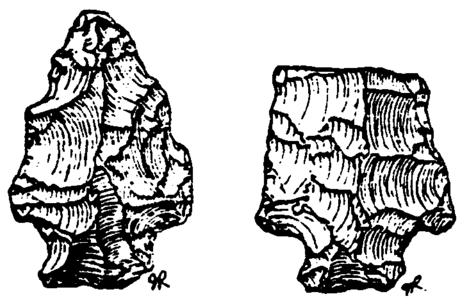
4 fragmentary specimens
Figure VI-41
Type Category: 442540

METRICS:

Weight	6 g	nt	nt	nt
Length	37 mm	nt	nt	nt
Width	24 mm	32 mm	21 mm	26 mm
Thickness	7 mm	6 mm	5 mm	8 mm
Haft Length	10 mm	10 mm	6 mm	9 mm
Max. Haft Width	nt	18 mm	nt	16 mm
Min. Haft Width	15 mm	18 mm	11 mm	14 mm

MORPHOLOGY: Blade -- broad triangular form with straight edges, except in two specimens where one edge is irregularly chipped. Cross Section -- flattened biconvex; Shoulder -- well-defined, angular; Haft -- slightly expanding stem with angular stem corners and a straight to slightly excurvate basal edge.

COMPARISONS: These points fit within the range of Late Woodland types discussed in Perino (1971:plate 50); however, they may have a longer range as they are generalized in conformation and resemble a number of Woodland styles.



1160 1221

Figure VI-41. Expanded Stem 98

Expanded Stem (Unidentified)

3 broken specimens
Type Category: 442300

METRICS:

Weight	nt	nt	nt
Length	nt	nt	nt
Width	nt	nt	nt
Thickness	7 mm	6mm	nt
Haft Length	14 mm	16 mm	nt
Max. Haft Width	25 mm	21 mm	26 mm
Min. Haft Width	16 mm	19 mm	24 mm

MORPHOLOGY: These specimens are fragments for which no established type was known and for which insufficient evidence was available to justify the establishment of new types. One rather large specimen has been damaged; its haft is a rounded expanding stem which retains cortex. The remaining two have slightly concave bases and one is more deeply notched than the other.

Bifurcated Base Projectile Points

Bifurcate 1 (LeCroy)

1 intact, 1 fragmentary specimens
Figure VI-42
Type Categories: 41/442412

METRICS:

Weight	4 g	nt
Length	44 mm	nt
Width	29 mm	25 mm
Thickness	8 mm	5 mm
Haft Length	14 mm	14 mm
Max.Haft Width	20 mm	nt
Min.Haft Width	20 mm	19 mm

MORPHOLOGY: Blade -- triangular, straight; one edge is recurvate; minor serrations are present; Cross Section -- one biconvex, one plano-convex; Shoulder -- expanded, horizontal; Haft -- slightly expanded; bifurcated base, rounded curicles produced by grinding.

COMPARISONS: Numerous sources (Cambron and Hulse 1975:77; DeJarnette et al. 1962:60; Bell 1960:64) place this type in the Early Archaic.

COMMENTS: Broyles (1971:69) and Chapman (1975:106-108) have dated this type at around 6300 B.C.

2324

Figure VI-42. Bifurcate 1 (LeCroy)

Bifurcate 13 (Stanly Stemmed)

1 fragmentary specimen

Figure VI-43
Type Category: 442432

METRICS:

Weight	nt
Length	nt
Width	36 mm
Thickness	8 mm
Haft Length	9 mm
Max.Haft Width	20 mm
Min.Haft Width	19 mm

MORPHOLOGY: Blade -- triangular, incurvate, serrated; Cross Section -- biconvex; Shoulder -- prominent, slightly barbed; Haft -- incurvate and thinned, no evidence of grinding.

COMPARISONS: This specimen resembles the Stanly Stemmed identified by Coe (1964:36) and particularly the specimen in his Figure 31. Perino (1968:92) estimates this type was manufactured by 5,000 B.C. and notes their distribution in North Carolina, Tennessee, Kentucky and adjacent areas.

Figure VI-43. Bifurcate 13 (Stanly Stemmed)

Contracted Stem Projectile Points

Contracted Stem 5 (Adena-like)

1 intact, 1 intact aborted, 4 fragmentary specimens
Figure VI-44
Type Categories: 41/42/442118

METRICS:

Weight	nt	nt	nt	nt	26 g	10 g
Length	nt	nt	nt	nt	55 mm	48 mm
Width	33 mm	29 mm	27 mm	30 mm	33 mm	21 mm
Thickness	8 mm	11 mm	9 mm	10 mm	15 mm	9 mm
Haft Length	18 mm	14 mm	16 mm	12 mm	10 mm	14 mm
Max. Haft Width	26 mm	22 mm	20 mm	17 mm	16 mm	15 mm
Min. Haft Width	24 mm	15 mm	12 mm	13 mm	10 mm	15 mm

MORPHOLOGY: Blade -- triangular to lanceolate form; usually slightly excurvate sides; broadly flaked; cortex retained on one specimen: Cross Section -- flattened biconvex; Shoulder -- slight, tapering; except for one specimen which is more defined; Haft -- broadly contracting stem with rounded basal edge.

COMPARISONS: These points are reminiscent of the Early Woodland Adena style; however, they are not as well-made.

COMMENTS: This category is reserved for the rather generalized "Adena-like" points which probably are datable to the Late Archaic/Early Woodland.

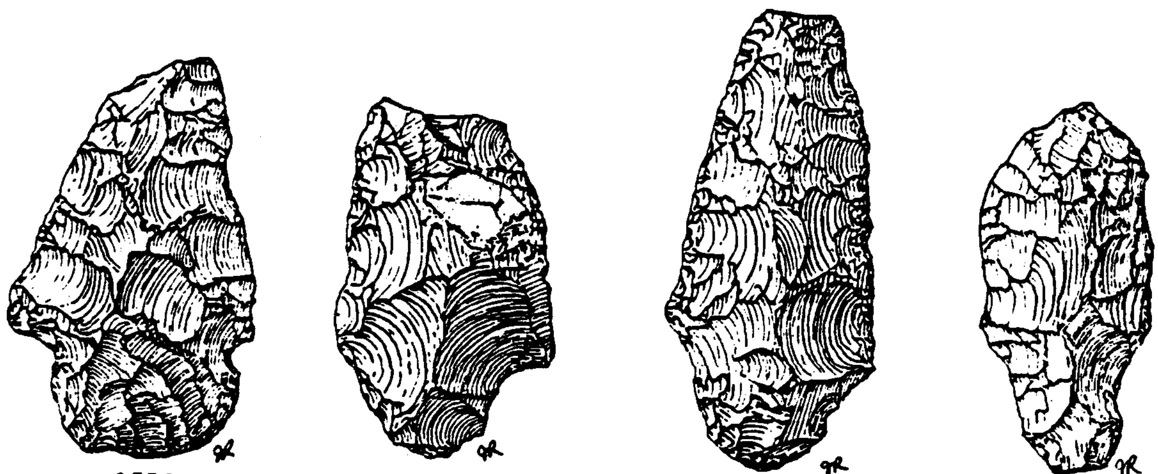


Figure VI-44. Contracted Stem 5 (Adena-like)

Contracted Stem 6 (Pickwick)

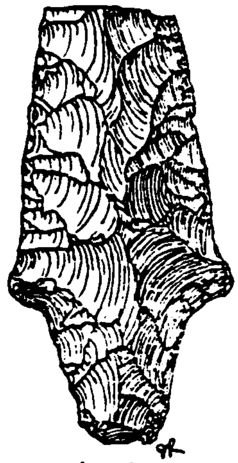
5 fragmentary specimens
Figure VI-45
Type Category: 442114

METRICS:

Weight	nt	nt	nt
Length	nt	nt	nt
Width	30 mm	30 mm	28 mm
Thickness	13 mm	12 mm	8 mm
Haft Length	nt	20 mm	nt
Max.Haft Width	17 mm	19 mm	17 mm
Min.Haft Width	nt	13 mm	nt

MORPHOLOGY: Blade -- elongated triangular; straight on one lateral edge, recurvate on the other; Cross Section -- biconvex; Shoulder -- expanded, tapered; Haft -- thick contracted stem formed by random, thin flaking. One of the unbroken stems is slightly rounded at the base. Another is acutely pointed, and a third is straight.

COMPARISONS: This type is discussed by Cambron and Hulse (1975) and placed in the Middle to Late Archaic Period.



4000

Figure VI-45. Contracted Stem 6 (Pickwick)

Contracted Stem 22 (Eva II)

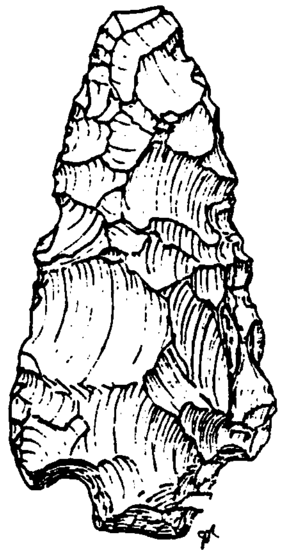
1 intact specimen
Figure VI-46
Type Category: 412148

METRICS:

Weight	19 g
Length	71 mm
Width	35 mm
Thickness	9 mm
Haft Length	9 mm
Max.Haft Width	18 mm
Min.Haft Width	16 mm

MORPHOLOGY: Blade -- triangular; straight to slightly excurvate lateral edges; Cross Section -- plano-convex; Shoulder -- slight, rounded barbs, straight to inversely tapered; Haft -- short, rounded stem.

COMPARISONS: This type was defined at the Eva Site by Lewis and Lewis (1961). The specimen illustrated above compares very well with the example identified in Plate 8-K by Lewis and Lewis. They assigned a time frame of 4000-2000 B.C., making this a Middle to Late Archaic point.



2688

Figure VI-46. Contracted Stem 22 (Eva II)

Contracted Stem 24 (Morrow Mountain, Straight Base)

1 fragmentary specimen
Figure VI-47
Type Category: 442150

METRICS:

Weight	nt
Length	nt
Width	nt
Thickness	8 mm
Haft Length	11 mm
Max.Haft Width	15 mm
Min.Haft Width	13 mm

MORPHOLOGY: Blade -- triangular; some serration and slightly excurvate lateral edges; Cross Section -- biconvex; Shoulder -- straight; Haft -- contracting stem; straight, thinned base.

COMPARISONS: This variant of the Morrow Mountain type (Coe 1964) is described by Cambron and Hulse (1975:91) and is placed temporally at pre-5000 B.P. (see Contracting Stem 26, this report).

3283

Figure VI-47. Contracted Stem 24
(Morrow Mountain Straight Base)

Contracted Stem 25 (New Market)

1 intact, 1 fragmentary specimen
Figure VI-48
Type Categories: 41/442119

METRICS:

Weight	10 g	nt
Length	59 mm	nt
Width	20 mm	24 mm
Thickness	11 mm	10 mm
Haft Length	16 mm	14 mm
Max.Haft Width	16 mm	16 mm
Min.Haft Width	12 mm	11 mm

MORPHOLOGY: Blade -- elongated triangular, straight lateral edge with fine retouch, acute distal tip; Cross Section -- biconvex; Shoulder -- narrow tapered; Haft -- contracting stem; rounded base on one specimen; the other appears unfinished; both stems exhibit partial fine retouch along the lateral edges.

COMPARISONS: These two points correspond to Cambron and Hulse's (1975:96) New Market type except that the points presented here are slightly larger. Cambron and Hulse place these points in the Woodland Period or later.

111

Figure VI-48. Contracted Stem 25 (New Market)

Contracted Stem 26 (Morrow Mountain, Rounded Base)

3 intact, 1 intact aborted,
1 fragmentary specimen
Figure VI-49
Type Categories: 41/42/442151

METRICS:

Weight	7 g	7 g	8 g	9 g	6 g
Length	40 mm	41 mm	42 mm	40 mm	42 mm
Width	nt	31 mm	31 mm	30 mm	21 mm
Thickness	7 mm	6 mm	7 mm	8 mm	7 mm
Haft Length	8 mm	8 mm	10 mm	9 mm	4 mm
Max.Haft Width	nt	15 mm	21 mm	17 mm	12 mm
Min.Haft Width	18 mm	13 mm	15 mm	11 mm	12 mm

MORPHOLOGY: Blade -- triangular, two are asymmetrical with one blade edge excurvate the other straight; three other specimens have excurvate blade edges, asymmetric form due to retouch on excurvate edges, serrations common but varied; distal end acute or acuminate; Cross Section -- biconvex or flattened; Shoulder -- weak, tapered; Haft -- rounded, thinned; three bases may be unfinished.

COMPARISONS: These specimens bear a strong resemblance to DeJarnette et al.'s (1962) Morrow Mountain Rounded Base and conform to dimensions given by Cambron and Hulse (1975:90). The latter suggests an Early Archaic assignment for this type. Lewis and Lewis (1969:Plate 8), who presented the closest facsimile to the points presented here, found these points associated with the Three Mile and Big Sandy Phases at Eva, making them predominantly Middle and Late Archaic tools. These points also closely correspond to Faulkner and McCollough's (1973:129-130) Type 116 which they date to the Middle Archaic.

3016

Figure VI-49. Contracted Stem 26
(Morrow Mountain, Rounded Base)

Contracted Stem 27 (Morrow Mountain, Round Base, Elongated)

2 intact specimens
Figure VI-50
Type Category: 412152

METRICS:

Weight	16 g	12 g
Length	71 mm	62 mm
Width	27 mm	26 mm
Thickness	8 mm	9 mm
Haft Length	6 mm	8 mm
Max.Haft Width	15 mm	17 mm
Min.Haft Width	15 mm	13 mm

MORPHOLOGY: Blade -- elongated triangular; slightly asymmetrical one side of each specimen more excurvate than the other; one specimen has fine retouch on both faces of the blade; Cross Section -- biconvex; Shoulder -- tapered; Haft -- short, rounded stem, some thinning.

COMPARISONS: These points have the diagnostic rounded base but exhibit a narrower blade and a less pronounced shoulder than specimens in Cambron and Hulse (1975). They are similar to examples illustrated in DeJarnette et al. (1962:81). This type is considered Middle Archaic in origin.

4702

Figure VI-50. Contracted Stem 27
(Morrow Mountain, Rounded Base, Elongated)

Contracted Stem 28 (Gary)

1 intact specimen
Figure VI-51
Type Category: 412153

METRICS:

Weight	8 g
Length	54 mm
Width	24 mm
Thickness	7 mm
Haft Length	17 mm
Max.Haft Width	15 mm
Min.Haft Width	11 mm

MORPHOLOGY: Blade -- triangular, excurvate lateral edges, acute tipped; Cross Section -- plano-convex; Shoulder -- weak, tapered; Haft -- contracting stem straight, slightly excurvate base which is finely retouched and ground.

COMPARISONS: Among the many variants of the Gary type, this specimen closely resembles the form presented by Cambron and Hulse (1975:57) which is dated from the Late Archaic to the Middle Woodland.

6026

Figure VI-51. Contracted Stem 28 (Gary)

Contracted Stem 29

1 fragmentary specimen
Figure VI-52
Type Category: 442154

METRICS:

Weight	nt
Length	nt
Width	23 mm
Thickness	8 mm
Haft Length	11 mm
Max. Haft Width	12 mm
Min. Haft Width	11 mm

MORPHOLOGY: Blade -- triangular in form, rather broad flaking followed by minimal pressure flaking and edge retouch. Part of blade is heat-shattered; Cross Section -- biconvex; Shoulder -- well-defined, barbed; Haft -- slightly bulbous stem which contracts to a more or less straight base. Base is not well-thinned.

COMPARISONS: No comparable named type was located in the literature; however, the point resembles generalized Woodland styles of small, stemmed points.

4657

Figure VI-52. Contracted Stem 29

Contracted Stem 30 (Dickson)

1 intact, 2 fragmentary specimens
Figure VI-53
Type Categories: 41/442155

METRICS:

Weight	nt	26 g	nt
Length	nt	69 mm	nt
Width	29 mm	28 mm	26 mm
Thickness	9 mm	15 mm	10 mm
Haft Length	11 mm	18 mm	17 mm
Max. Haft Width	16 mm	19 mm	18 mm
Min. Haft Width	14 mm	14 mm	14 mm

MORPHOLOGY: Blade -- essentially lanceolate form with parallel sides, carefully pressure flaked; Cross Section -- biconvex; Shoulder -- well-defined, angular shoulders, tapering to stem edges which are lightly ground; Haft -- contracting stem with a straight or slightly excurvate basal edge. One specimen has a cortical base.

COMPARISONS: These specimens are very similar to the Dickson Contracting Stem discussed in Montet-White (1968). Winters (1963) suggests this style is Early Woodland in date.

COMMENTS: One specimen has a cortical surface which covers about 2/3 of one of the blade edges and cuts off the shoulder on that side.

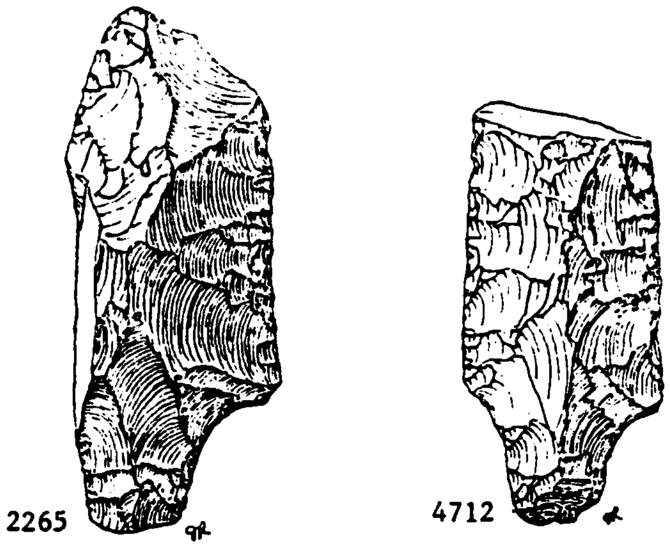


Figure VI-53. Contracted Stem 30 (Dickson)

Side-Notched Projectile Points

Side Notched 1 (Big Sandy)

2 intact, 2 fragmentary specimens
Figure VI-54
Type Categories: 41/442613

METRICS:

Weight	5 g	6 g	nt	nt
Length	43 mm	40 mm	nt	nt
Width	21 mm	20 mm	20 mm	nt
Thickness	6 mm	6 mm	6 mm	10 mm
Haft Length	13 mm	9 mm	13 mm	12 mm
Max.Haft Width	21 mm	22 mm		27 mm
Min.Haft Width	15 mm	16 mm	18 mm	22 mm

MORPHOLOGY: Blade -- triangular with straight lateral edges; one is slightly serrated; Cross Section -- biconvex; Shoulder -- slightly tapered; Haft -- side-notched, incurvate base thinned and ground.

COMPARISONS: These specimens resemble the Big Sandy points illustrated in Cambron and Hulse (1975:14). Based on excavations at the Eva Site, Lewis and Lewis (1961) date this type from late Middle Archaic through Late Archaic, around 4,000-2,000 B.C.

2774

Figure VI-54. Side Notched 1 (Big Sandy)

Side Notched 7 (Sublet Ferry)

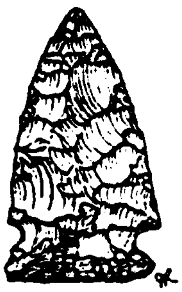
1 intact specimen
Figure VI-55
Type Category: 412623

METRICS:

Weight	4 g
Length	36 mm
Width	20 mm
Thickness	5 mm
Haft Length	8 mm
Max.Haft Width	20 mm
Min.Haft Width	16 mm

MORPHOLOGY: Blade -- triangular, excurvate and finely serrated, acute tip; Cross Section -- biconvex; Shoulder -- slightly tapered; Haft -- base is straight and thinned, side notches are shallow.

COMPARISONS: This type is considered Early Woodland and possibly Late Archaic by Cambron and Hulse (1975:119).



2712

Figure VI-55. Side Notched 7 (Sublet Ferry)

Side Notched 9 (Brewerton Side Notched)

1 intact specimen
Figure VI-56
Type Category: 412621

METRICS:

Weight	4 g
Length	33 mm
Width	17 mm
Thickness	7 mm
Haft Length	10 mm
Max. Haft Width	20 mm
Min. Haft Width	15 mm

MORPHOLOGY: Blade -- triangular, slightly excurvate edges, thick with numerous hinge fractures; Cross Section -- biconvex; Shoulder -- rounded; Haft -- pronounced side notches, rounded stem sides; base is thinned and ground.

COMPARISONS: This point resembles the smallest of the Brewerton Side Notched points illustrated by Ritchie (1961:19, 72) and is presumed to be of Middle and Late Archaic association.

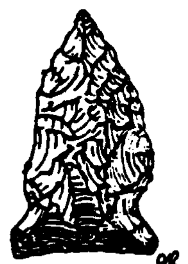


Figure VI-56. Side Notched 9 (Brewerton Side Notched)

Side Notched 22 (Matanzas)

1 fragmentary specimen
Figure VI-57
Type Category: 442641

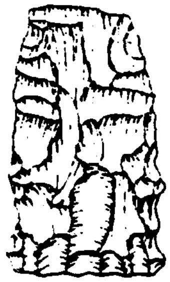
METRICS:

Weight	nt
Length	nt
Width	20 mm
Thickness	7 mm
Haft Length	10 mm
Max.Haft Width	20 mm
Min.Haft Width	18 mm

MORPHOLOGY: Blade -- roughly triangular, parallel to slightly excurvate; Cross Section -- biconvex; Shoulder --

very weak; Haft -- slight side notches; straight thinned base.

COMPARISONS: This point is comparable in general appearance to the Matanzas illustrated by Perino (1968:54-55). The suggested cultural affiliation is Late Archaic.



6165

Figure VI-57. Side Notched 22 (Matanzas)

Side Notched 27 (Rowan-like)

1 intact, 1 fragmentary specimens
Figure VI-58
Type Categories: 41/442648

METRICS:

Weight	nt	9 g
Length	53 mm	47 mm
Width	22 mm	24 mm
Thickness	5 mm	7 mm
Haft Length	13 mm	16 mm
Max.Haft Width	nt	24 mm
Min.Haft Width	16 mm	19 mm

MORPHOLOGY: Blade -- subtriangular; excurvate, random flaking with fine retouch and serrated edges; Cross Section -- flattened; Shoulder -- weakly tapered; Haft -- wide notches; beveled base and notches are ground.

COMPARISONS: Perino (1971:88) estimates a date of 8,500-9,500 B.P. for this type and notes its distribution throughout most of the southeast.

COMMENTS: One specimen has a severe hinge fracture on the base and may have been aborted during manufacture.

5254

Figure VI-58. Side Notched 27 (Rowan-like)

Side Notched 28 (Unnamed)

14 intact, 4 fragmentary specimens
Figure VI-59
Type Categories: 41/442646

METRICS:

	$\bar{x}$	range	n
Weight	5.5 g	4-8 g	14
Length	40.0 mm	35-49 mm	14
Width	18.9 mm	15-22 mm	18
Thickness	7.3 mm	6-9 mm	18
Haft Length	14.2 mm	11-16 mm	18
Max.Haft Width	18.5 mm	15-21 mm	18
Min.Haft Width	14.5 mm	12-16 mm	18

MORPHOLOGY: Blade -- triangular, straight to excurvate lateral edges, acute tipped; Cross Section -- biconvex; Shoulder -- weak, tapered; Haft -- shallow, often broad side notches, six specimens have unfinished bases, eight are thinned, no grinding was apparent. Bases are characteristically straight.

COMPARISONS: These artifacts are very similar to those discussed by Faulkner and McCullough (1973:100) as types 61 through 65. They are associated with the Middle to Late Woodland in the middle Tennessee drainage and are comparable to the Bakers Creek, Steuben and Lowe types.

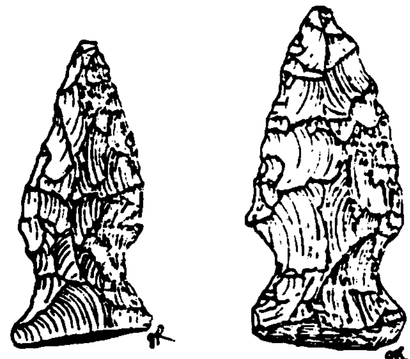


Figure VI-59. Side Notched 28 (Unnamed)

Side Notched 29 (Unnamed)

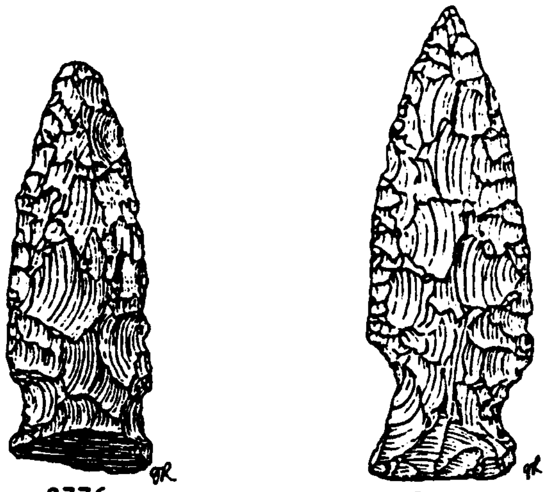
4 intact, 8 fragmentary specimens
Figure VI-60
Type Categories: 41/442647

METRICS:

	$\bar{x}$	range	n
Weight	8.6 g	8-9 g	4
Length	56.0 mm	50-62 mm	5
Width	19.9 mm	20-23 mm	12
Thickness	6.8 mm	6-8 mm	12
Haft Length	14.4 mm	12-20 mm	12
Max.Haft Width	20.4 mm	18-23 mm	10
Min.Haft Width	14.5 mm	14-16 mm	12

MORPHOLOGY: <u>Blade</u> -- triangular; one broken specimen may be lanceolate in form; straight to excurvate lateral edges; fine retouch on most blade edges; <u>Cross Section</u> -- flattened, two specimens are plano-convex; <u>Shoulder</u> -- tapered; <u>Haft</u> -- broad side notches; base is thinned and ground; cortex is present on the base of one specimen.

COMPARISONS: These points appear to be related to the Side Notched 28 type (this report). The shoulder and haft are very similar but Side Notched 29 specimens are longer, thinner and exhibit fine retouch on the blades. Similar to Side Notched 28, Side Notched 29 can fit the Steuben-Lowe-Bakers Creek morphologies and also resembles Faulkner and McCullough's (1973:103) types 67, 68 which are Middle to Late Woodland in origin.



3776 2131

Figure VI-60. Side Notched 29 (Unnamed)

Side Notched 30 (Unnamed)

3 intact, 1 intact aborted specimens
Figure VI-61
Type Categories: 41/422649

METRICS:

Weight	7 g	9 g	7 g	9 g
Length	52 mm	60 mm	48 mm	60 mm
Width	15 mm	20 mm	20 mm	20 mm
Thickness	9 mm	10 mm	7 mm	9 mm
Haft Length	13 mm	15 mm	11 mm	13 mm
Max.Haft Width	14 mm	20 mm	17 mm	17 mm
Min.Haft Width	12 mm	13 mm	15 mm	15 mm

MORPHOLOGY: <u>Blade</u> -- lanceolate, thick, crude blade with excurvate lateral edges; <u>Cross Section</u> -- biconvex; <u>Shoulder</u> -- weak tapered; <u>Haft</u> -- short stemmed; base is excurvate, exhibits very little thinning.

COMPARISONS: These specimens can be typed as Early Woodland Spike points but are probably crude examples of a thicker Side Notched 29 (this report). As such, a Middle to Late Woodland association is suggested.

COMMENTS: The blade of one specimen is excurvate and exhibits numerous hinge fractures which suggests a function other than as a projectile point.

4501

Figure VI-61. Side Notched 30 (Unnamed)

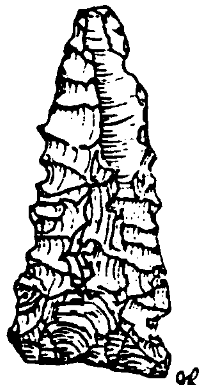
Side Notched 31 (Pine Tree-like)

1 intact specimen
Figure VI-62
Type Category: 412650

METRICS:	
Weight	4 g
Length	51 mm
Width	21 mm
Thickness	7 mm
Haft Length	9 mm
Max.Haft Width	23 mm
Min.Haft Width	19 mm

MORPHOLOGY: Blade -- triangular, serrated lateral edges, straight, damaged by impact fracture; Cross Section -- biconvex; Shoulder -- narrow; Haft -- side notching produces an expanded stem, notches are only slightly larger than some of the serrations; broad deep flakes removed from the slightly incurvate base.

COMPARISONS: This point is smaller and lacks the pronounced side notches of the Cambron and Hulse (1975:104) example but conforms to all other characteristics. Its chronological affiliation is purported'y Early Archaic.



5017

Figure VI-62. Side Notched 31 (Pine Tree-like)

Side Notched 32 (Unnamed)

6 fragmentary specimens
Figure VI-63
Type Category: 442651

METRICS:

Weight	nt	nt	nt	nt	nt	nt
Length	nt	nt	nt	nt	nt	nt
Width	19 mm	20 mm	19 mm	20 mm	20 mm	18 mm
Thickness	6 mm	6 mm	5 mm	7 mm	5 mm	6 mm
Haft Length	15 mm	10 mm	15 mm	13 mm	13 mm	10 mm
Max.Haft Width	19 mm	nt	17 mm	20 mm	17 mm	21 mm
Min.Haft Width	14 mm	14 mm	14 mm	15 mm	14 mm	17 mm

MORPHOLOGY: <u>Blade</u> -- triangular, excurvate; <u>Cross Section</u> -- flattened to biconvex; <u>Shoulder</u> -- weak, tapered; <u>Haft</u> -- broad side notches produce an expanded base which is thinned and excurvate.

COMPARISONS: These fragments are related to Side Notched 28 (this report) in form and size except that they are thinner and have excurvate bases. They exhibit very little retouch and appear somewhat crude. It is assumed that they are contemporaneous with Side-Notched 28 and are therefore Middle to Late Woodland in date.

2238

Figure VI-63. Side Notched 32 (Unnamed)

Lanceolate Projectile Points

Lanceolate 7 (Copena)

2 intact specimens
Figure VI-64
Type Category: 412923

METRICS:

Weight	9 g	10 g
Length	60 mm	67 mm
Width	20 mm	25 mm
Thickness	8 mm	9 mm
Haft Length	20 mm	20 mm
Max.Haft Width	19 mm	20 mm
Min.Haft Width	24 mm	25 mm

MORPHOLOGY: Blade -- lanceolate, recurvate, acute tipped; Cross Section -- biconvex; Shoulder -- none; Haft -- recurvature near base more pronounced on one side of both points; bases are thinned.

COMPARISONS: Both points are crudely finished, exhibiting knots on one face of each point. Their form compares to examples presented by Bell (1960:21D-F). Walthall (1973:603) dates Copena from Early to Middle Woodland in the Middle and Upper Tennessee River drainage.

3390

Figure VI-64. Lanceolate 7 (Copena)

Lanceolate 9 (Steubenville Stemmed)

1 fragmentary specimen
Figure VI-65
Type Category: 442925

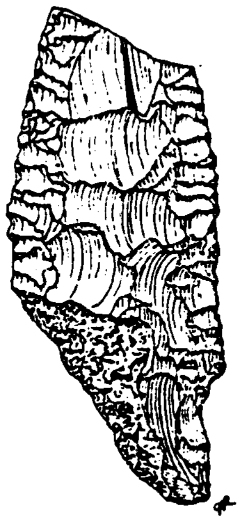
METRICS:

Weight	nt
Length	nt
Width	nt
Thickness	9 mm
Haft Length	13 mm
Max. Haft Width	nt
Min. Haft Width	nt

MORPHOLOGY: Blade -- lanceolate, sinuous edges, broad flaking on medial portion of blade, pressure flaking along edges; Cross Section -- biconvex; Shoulder -- very weak; Haft -- slightly expanding, broad stem nearly as wide as blade; basal edge missing but probably incurvate.

COMPARISONS: Ritchie (1961:51-52) describes points of this type from the upper Ohio Valley. Their cultural affiliation is under dispute as Mayer-Oakes considered them Early Archaic, Dragoo places them in Late Archaic and they may be associated with ceramics in New York.

COMMENTS: The specimen has been heat-damaged.



3164

Figure VI-65. Lanceolate 9 (Steubenville Stemmed)

Lanceolate 12 (Guntersville)

1 intact, 4 fragmentary specimens
Figure VI-66
Type Category: 41/442927

METRICS:

Weight	4 g	nt	nt	nt	nt
Length	44 mm	nt	nt	nt	nt
Width	13 mm	13 mm	20 mm	17 mm	16 mm
Thickness	7 mm	5 mm	8 mm	7 mm	7 mm
Haft Length	20 mm	nt	nt	nt	nt
Max.Haft Width	17 mm	nt	nt	nt	nt
Min.Haft Width	13 mm	nt	nt	nt	nt

MORPHOLOGY: <u>Blade</u> -- lanceolate, acute point on the single intact specimen; <u>Cross Section</u> -- generally biconvex; one specimen plano-convex; <u>Shoulder</u> -- none; <u>Haft</u> -- base is straight and thinned.

COMPARISONS: The type is associated with Madison points, shell tempered pottery (Cambron and Hulse 1975:62) and historic burials (Kneberg 1956). Similar points reported by Faulkner and McCullough (1973:90, Type 45) are considered to have a Late Woodland-Mississippian affiliation.

2345

Figure VI-66. Lanceolate 12 (Guntersville)

Lanceolate 13 (Benjamin)

1 intact specimen
Figure VI-67
Type Category: 412928

METRICS:

Weight	9 g
Length	51 mm
Width	20 mm
Thickness	9 mm
Haft Length	17 mm
Max.Haft Width	19 mm
Min.Haft Width	16 mm

MORPHOLOGY: Blade -- lanceclate, excurvate edges, acute tipped, slight recurvature near base; Cross Section -- biconvex; Shoulder -- none; Haft -- slightly recurvate on one lateral edge near base; base is straight and thinned.

COMPARISONS: Although slightly below the lowest range in length and width as reported by Cambron and Hulse (1975:11), this point conforms to the Benjamin type, dated to the Woodland Period.

1032

Figure VI-67. Lanceolate 13 (Benjamin-like)

Triangular Projectile Points

Triangular 1 (Madison)

1 fragmentary specimen
Figure VI-68
Type Category: 442931

METRICS:

Weight	1 g
Length	24 mm
Width	20 mm
Thickness	3 mm

MORPHOLOGY: Blade -- triangular, straight and slightly serrated; Cross Section -- plano-convex; Shoulder -- none; Haft -- hafting area is undefined; base is straight and partially ground.

COMPARISONS: Madison points share many similarities with some Hamilton and Fort Ancient projectile points; however, the present specimen has neither the incurvate blade typical of Hamilton nor the serrations characteristic of Fort Ancient points. The Madison type is considered late prehistoric to historic and dates to A.D. 900 - A.D. 1675 (Cambron and Hulse 1975).

COMMENTS: The convex side of the specimen is thermally fractured.

5925

Figure VI-68. Triangular 1 (Madison)

Triangular 2 (Ft. Ancient)

1 intact specimen
Figure VI-69
Type Category: 412932

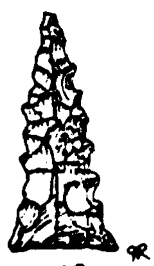
METRICS:

Weight	1 g
Length	32 mm
Width	15 mm
Thickness	4 mm

MORPHOLOGY: Blade -- triangular, serrated and slightly incurvate near the distal end; Cross Section -- plano-convex; Shoulder -- none; Haft -- hafting defined by slight incurvature of blade near the base which is straight and thinned.

COMPARISONS: Serrations on this specimen are the principal reason for typing it as Ft. Ancient instead of Madison or Hamilton (Cambron and Hulse 1975:54).

COMMENTS: Bell (1960:40) associates this type with the Feurt Focus (A.D. 1200-1600 A.D.).



1348

Figure VI-69. Triangular 2 (Ft. Ancient)

Triangular 9 (Nolichucky)

3 intact, 1 fragmentary specimens
Figure VI-70
Type Categories: 41/442939

METRICS:

Weight	nt	4 g	7 g	7 g
Length	44 mm	37 mm	44 mm	50 mm
Width	nt	23 mm	20 mm	20 mm
Thickness	6 mm	5 mm	7 mm	7 mm
Haft Length	nt	13 mm	16 mm	15 mm
Max.Haft Width	nt	23 mm	22 mm	21 mm
Min.Haft Width	nt	18 mm	21 mm	20 mm

MORPHOLOGY: Blade -- trianguloid, straight to excurvate with slight recurvature on the three complete points, fine retouch on blade edge; Cross Section -- biconvex, one specimen is flattened; Shoulder -- extremely weak; Haft -- one-third to one-half of point's length is lightly ground; straight base, finely thinned, corners are angular exhibiting only very slight expansion.

COMPARISONS: These points are defined by Lewis and Kneberg (1957) at the Camp Creek Site and are considered Early Woodland, dating around 2050+/-250 B.C. Cambron and Hulse (1975:98) suggest a Late Woodland association.

1068

Figure VI-70. Triangular 9 (Nolichucky)

Triangular 12 (Copena Triangular)

2 intact, 1 intact aborted,
28 fragmentary specimens
Figure VI-71
Type Categories: 41/42/442942

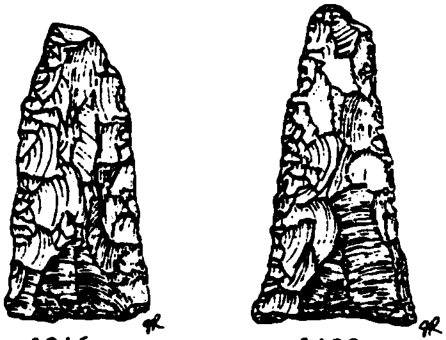
METRICS:

	$\bar{x}$	range	n
Weight	5 g	4-6 g	3

Length	39.6 mm	35-45 mm	5
Width	21.6 mm	17-26 mm	31
Thickness	7.2 mm	5-11 mm	31

MORPHOLOGY: Blade -- triangular, generally straight, eight are very slightly incurvate 2-3 mm above the base, four of the smaller points are slightly excurvate on one side; Cross Section -- characteristically biconvex, four are plano-convex; Shoulder -- absent; Haft -- 14 are ground on the sides of the base; all bases are straight and thinned; 15 are ground.

COMPARISONS: These may be placed in the Copena Triangle type or its variant (Faulkner and McCullough 1973:96, Types 53, 55 and 56; Cambron and Hulse 1975:32; Butler 1971:39-41; Walthall 1973:603). An Early-Middle Woodland temporal affiliation is suggested by the above sources. The large proportion of fragments to complete points skews the average length and weight. Average length would be approximately 45 mm while average weight is estimated to be 7-8 g. These metrics indicate that specimens cluster at the small end of the range for this type. They also show similarities to Keel's (1976) Connestee Triangular.



1246 1430

Figure VI-71. Triangular 12 (Copena Triangular)

Triangular 13 (Candy Creek)

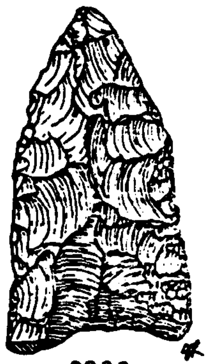
1 intact specimen
Figure VI-72
Type Category: 412943

METRICS:

Weight	8 g
Length	45 mm
Width	22 mm
Thickness	15 mm
Haft Length	14 mm
Max.Haft Width	24 mm
Min.Haft Width	22 mm

MORPHOLOGY: Blade -- triangular, excurvate on one side, recurvate on the other; Cross Section -- biconvex; Shoulder -- none; Haft -- base is slightly expanded, rounded and auriculate, thoroughly ground on lateral edges and base. Large thinning flake removed from base on one face resembles a flute.

COMPARISONS: It is associated with Copena types (Cambron and Hulse 1975:23) and dated by Kneberg (1956) to 1000 B.C. - A.D. 500.



3230

Figure VI-72. Triangular 13 (Candy Creek)

Triangular 14 (Flint River Spike-like)

1 intact aborted specimen
Figure VI-73
Type Category: 422944

METRICS:	
Weight	10 g
Length	62 mm
Width	21 mm
Thickness	10 mm
Haft Length	18 mm
Max.Haft Width	20 mm
Min.Haft Width	19 mm

MORPHOLOGY: Blade -- elongated triangular, acute tipped, slightly excurvate with a very subtle recurvature near the base on one lateral edge; Cross Section -- biconvex; Shoulder -- none; Haft -- unfinished, failure to thin base resulted in hinge fractures.

COMPARISONS: This is a slightly larger version of the Flint River Spike presented by DeJarnette et al. (1962:56) who place it in the Early Woodland Period.

1220

Figure VI-73. Triangular 14 (Flint River Spike-like)

Drills

While the typology employed in this analysis is intended to be largely technological in design, certain functional tool forms are so widely recognized in the archaeological record that they have been incorporated here. Drills comprise that group of artifacts which were used for perforating tasks of many kinds. Six varieties were recognized in the assemblage.

Drill 5 (Flared Base)

1 fragmentary specimen
Figure VI-74
Type Category: 445712

METRICS:

Weight	nt
Length	36 mm
Width	nt
Thickness	6 mm
Haft Length	17 mm
Max.Haft Width	nt
Min.Haft Width	nt

MORPHOLOGY: Blade -- narrow, short, straight to slightly incurvate, highly polished; Cross Section -- biconvex; Shoulder -- tapered; Haft -- flared base on unbroken side; base is incurvate and ground.

COMPARISONS: Similar artifacts have been identified on several sites in Kentucky such as Indian Knoll (Webb 1946) and the Rosenberger and Longworth-Gick sites near Louisville; however, this type of drill has not been isolated temporally.

92

Figure VI-74. Drill 5 (Flared Base)

Drill 14

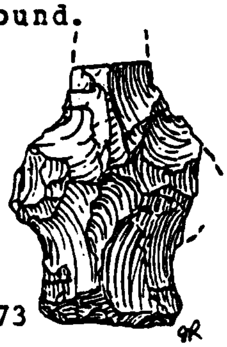
1 fragmentary specimen
Figure VI-75
Type Category: 445718

METRICS:

Weight	nt
Length	nt
Width	nt
Thickness	10 mm
Haft Length	12 mm
Max.Haft Width	19 mm
Min.Haft Width	17 mm

MORPHOLOGY: Blade -- none; Cross Section -- biconvex; Shoulder -- tapered, rounded; Haft -- slightly expanded stem is thinned and ground.

COMPARISONS: None were found.



873

Figure VI-75. Drill 14

Drill 20 (Unnamed)

1 intact specimen
Figure VI-76
Type Category: 415948

METRICS:

Weight	6 g	6 g
Length	40 mm	60 mm
Width	12 mm	11 mm
Thickness	12 mm	7 mm
Haft Length	nt	nt
Max.Haft Width	nt	nt
Min.Haft Width	nt	nt

MORPHOLOGY: Blade -- parallel sided, medial ridge; Cross Section -- triangular; relatively thick; Shoulder -- none; Haft -- none.

COMPARISONS: None were found in the present literature that would permit temporal or cultural identification.

COMMENTS: This drill/perforator is either a reworked linear biface fragment or purposely removed burin spall. Systematic bifacial flaking is present on one edge of the tool. On the other edge, modification is limited to a few flakes removed from one end.

Figure VI-76. Drill 20 (Unnamed)

Drill 21 (Owl Hollow)

1 intact, 1 fragmentary specimen
Figure VI-77
Type Categories: 41/445949

METRICS:

Weight	1 g	nt
Length	22 mm	nt
Width	2 mm	2 mm
Thickness	2 mm	2 mm
Haft Length	nt	nt
Max.Haft Width	nt	nt
Min.Haft Width	nt	nt

MORPHOLOGY: Blade -- small flake, bifacially chipped on one edge; unifacially chipped on the others; Cross Section -- triangular; Shoulder -- none; Haft -- none.

COMPARISONS: These specimens are identical to the micro-tools illustrated by Cobb and Faulkner (1978:21, Figure 23, K) which are from the Owl Hollow Site and are considered to date to the early Middle Woodland in the Upper Duck and Elk river drainages of south-central Tennessee.

5949

Figure VI-77. Drill 21

Drill 22

1 fragmentary specimen
Figure VI-78
Type Category: 445950

METRICS:

Weight	nt
Length	nt
Width	12 mm
Thickness	5 mm
Haft Length	2 mm
Max.Haft Width	nt
Min.Haft Width	nt

MORPHOLOGY: Blade -- narrow; elongated; medial ridge; lateral edges slightly incurvate; Cross Section -- biconvex; Shoulder -- tapered; Haft -- very small rounded stem, thinned by removal of two flakes on one face.

COMPARISONS: Adequate comparisons could not be made.

COMMENTS: Heavy wear is present just below fracture at the tip.

6151

Figure VI-78. Drill 22

Drill 23

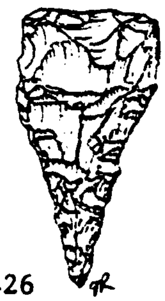
2 intact specimens
Figure VI-79
Type Category: 415951

METRICS:

Weight	4 g	5 g
Length	36 mm	43 mm
Width	18 mm	20 mm
Thickness	6 mm	6 mm
Haft Length	nt	nt
Max.Haft Width	nt	nt
Min.Haft Width	nt	nt

MORPHOLOGY: Blade -- triangular, straight on one specimen, incurvate on the other; Cross Section -- one specimen plano-convex, the other biconvex; Shoulder -- tapered; Haft -- no stem present; hafting area exhibits straight sides and straight bases; one specimen is thinned only on the lateral edges and the ground.

COMPARISONS: Morphologically these specimens resemble Mississippian Pentagonals (DeJarnette et al. 1962:62). They are placed in the drill/perforator category due to the presence of polish on their tips. Cambron and Hulse (1975:69) place the projectile point form of this tool as pre-Madison which dates at least Late Woodland to Early Mississippian.



426

Figure VI-79. Drill 23

Drill 25

1 fragmentary specimen
Figure VI-80
Type Category: 445753

METRICS:

Weight	nt
Length	nt
Width	20 mm
Thickness	12 mm

MORPHOLOGY: Blade -- thick, narrow ovate form, broadly chipped; Cross Section -- trapezoidal; Shoulder -- none; Haft -- contracting base with rounded edge, hafting element clearly indicated by slight reduction in width from rest of blade and minimal grinding.

COMPARISONS: No comparable types were found in the literature.

COMMENTS: This specimen appears to be a heavy-duty perforator of some kind. An impact fracture is evident along one edge of the blade.

228

Figure VI-80. Drill 25

Drill Fragments

7 Specimens
Type Categories: 445710 - drill basal portion
445740 - drill tip

METRICS: None taken

MORPHOLOGY: These specimens exhibit the polish and morphological shape of drills but are too fragmentary to futher analyze to type.

Stage V - Reworking

This stage of manufacture produces artifacts which were reworked subsequent to damage (rejuvenated) or altered to perform a different function (recycled).

Reworking by recycling was noted for a number of hafted bifaces. It is assumed that the hafted bifaces with straight or rounded beveled distal ends were originally intended to function as projectile points/knives. However, due to use, manufacturing error or a shift in work priority, these tools were adapted to function in another capacity such as scraping. Projectile points may also be recycled into drills; however, no examples of this activity occurred in this assemblage. One projectile point was resharpened for continued use as a projectile.

Reworked Projectile Points

Rejuvenated Expanded Stem 15 (Mud Creek)

1 intact specimen
Not Illustrated
Type Category: 512326

METRICS:

Weight	11 g
Length	44 mm
Width	26 mm
Thickness	9 mm
Haft Length	13 mm
Max.Haft Width	18 mm
Min.Haft Width	17 mm

MORPHOLOGY: Blade -- triangular, excurvate lateral edges; Cross Section -- plano-convex due to resharpening; Shoulder -- straight expanding stem with straight lateral edges and slightly excurvate base, base is thinned on one side and exhibits a flat unmodified facet on opposing side.

COMPARISONS: See Expanded Stem 15 for a discussion of this type.

COMMENTS: This specimen apparently suffered an impact fracture and was rechipped.

Reworked Expanded Stem 69 (Palmer)

2 intact specimens
Figure VI-81
Type Category: 513397

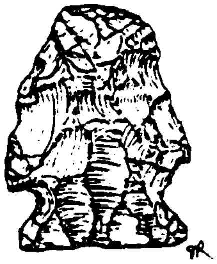
METRICS:

Weight	4 g	7 g
Length	29 mm	32 mm
Width	23 mm	24 mm
Thickness	6 mm	9 mm
Haft Length	10 mm	10 mm
Max. Haft Width	20 mm	23 mm
Min. Haft Width	15 mm	18 mm

MORPHOLOGY: Blade -- triangular, straight to excurvate, distal ends are steeply beveled by removal of two to four flakes; Cross Section -- biconvex and plano-convex; Shoulder -- barbed, inversely tapered; Haft -- expanded stem; thinned and heavily ground base.

COMPARISONS: See Expanded Stem 69 in this report.

COMMENTS: Heavy polish is apparent on the distal end of one specimen.



3311

Figure VI-81. Reworked Expanded Stem 69 (Palmer)

Reworked Expanded Stem 70 (Manker Corner Notched)

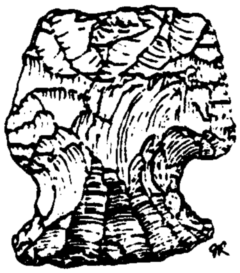
1 intact specimen
Figure VI-82
Type Category: 513398

METRICS:

Weight	10 g
Length	34 mm
Width	30 mm
Thickness	10 mm
Haft Length	13 mm
Max.Haft Width	27 mm
Min.Haft Width	20 mm

MORPHOLOGY: Blade -- squared, distal end straight, beveled; Cross Section -- plano-convex; Shoulder -- intact shoulder straight, opposing shoulder rounded; Haft -- expanded stem resulted from broad corner notching; excurvate base thinned with long flake scars on one surface.

COMPARISONS: See Expanded Stem 70 (this report).



4140

Figure VI-82. Reworked Expanded Stem 70
(Manker Corner Notched)

Reworked Expanded Stem 95 (Hamilton Stemmed)

1 intact specimen
Figure VI-83
Type Category: 513537

METRICS:

Weight	14 g
Length	42 mm
Width	34 mm
Thickness	10 mm
Haft Length	12 mm
Max.Haft Width	19 mm
Min.Haft Width	17 mm

MORPHOLOGY: Blade -- roughly squared; straight, distal end is bifacially flaked; Cross Section -- biconvex; Shoulder -- straight rounded; barbed; Haft -- expanding stem thinned and ground, lateral stem edges incurvate.

COMPARISONS: This closely matches the Hamilton Stemmed projectile point style illustrated by Cambron and Hulse (1975:65) which is considered Late Woodland in origin.

4900

Figure VI-83. Reworked Expanded Stem 95 (Hamilton Stemmed)

Reworked Expanded Stem (Unidentified)

4 fragmentary specimens
Figure VI-84
Type Category: 543390

METRICS:

Weight	6 g	nt	4 g	18 g
Length	32 mm	32 mm	20 mm	66 mm
Width	25 mm	30 mm	25 mm	34 mm
Thickness	6 mm	17 mm	7 mm	7 mm
Haft Length	13 mm	16 mm	12 mm	10 mm
Max. Haft Width	22 mm	21 mm	20 mm	nt
Min. Haft Width	18 mm	16 mm	17 mm	22 mm

MORPHOLOGY: These specimens are formerly expanded stem projectile points of unknown type which have been recycled into scrapers. In the process of reworking and/or use, the hafts have been rather severely altered which precludes their being placed in a known type. One specimen is larger than the others; its tip has been converted to a beveled "scraper"-type working edge. The base on this point is also fragmentary.

Figure VI-84. Reworked Expanded Stem (Unidentified)

Reworked Side Notched 22 (Matanzas)

1 intact specimen
Figure VI-85
Type Category: 513641

METRICS:

Weight	5 g
Length	27 mm
Width	22 mm
Thickness	6 mm
Haft Length	8 mm
Max.Haft Width	18 mm
Min.Haft Width	17 mm

MORPHOLOGY: Blade -- squared, broad parallel sided, distal end has a straight beveled edge; Cross Section -- biconvex; Shoulder -- both shoulders damaged; Haft -- slight expanded short stem; straight base thinned and ground.

COMPARISONS: The Matanzas point type was first identified in the Central Illinois River Valley (Munson and Harn 1966:153, 159). Similar points are found in shell mounds along the Ohio River (Perino 1968:54) and are tentatively assigned to the Late Archaic.

COMMENTS: Polish is present on the beveled face of the distal end; hinge fractures occur on the non-beveled face.

2652

Figure VI-85. Reworked Side Notched 22 (Matanzas)

Reworked Contracted Stem 24 (Morrow Mountain, Straight Base)

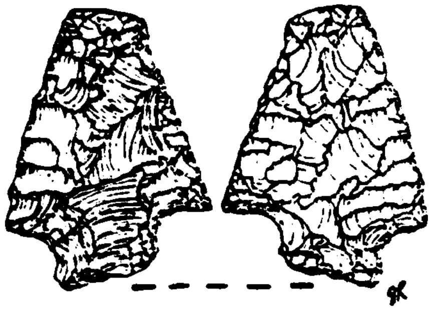
1 intact specimen
Figure VI-86
Type Category: 513150

METRICS:

Weight	6 g
Length	37 mm
Width	27 mm
Thickness	7 mm
Haft Length	10 mm
Max.Haft Width	15 mm
Min.Haft Width	14 mm

MORPHOLOGY: <u>Blade</u> -- triangular, asymmetrical, straight on one lateral edge, incurvate on the other, distal end is straight and beveled; <u>Cross Section</u> -- biconvex; <u>Shoulder</u> -- straight and tapered; <u>Haft</u> -- asymmetrical, rounded on one stem edge with a slight profusion on the other.

COMPARISONS: See Contracted Stem 26 in this report.



4025

Figure VI-86. Reworked Contracted Stem 26
(Morrow Mountain, Rounded Base)

Reworked Projectile Point Fragment (Stem, Shoulder, Blade)

1 specimen
Figure VI-87
Type Category: 543020

METRICS: none taken

MORPHOLOGY: This specimen is very poorly made. It appears to have been intended for a projectile point which may have been broken in manufacture, then salvaged somewhat by reworking into a beveled edge. It does not, however, show signs of wear and may have never been used.

2111

Figure VI-87. Reworked Projectile Point Fragment
(Stem, Shoulder, Blade)

Ground Stone

Included under this broad category are implements and tools which are characterized by a varied technology including such techniques as pecking, polishing, chipping, drilling, sawing and battering. A wide variety of raw materials may be used for the manufacture of these artifacts since the technology is not dependent on the chippability of the stone.

The artifacts under the ground stone category were analyzed using a morphological system, rather than a strictly reductive one. Although a general reductive technology can be ascertained from the manufacturing for ground stone, it is complicated by the numerous manufacturing techniques which are used to produce these tools. For any particular artifact type, the techniques used to produce it may vary in number, type and sequential order when compared to another artifact type. Another problem with employing a reductive sequence is the general lack of discernible manufacturing debris (the exceptions being the core from hollow drilling.

Artifact category numbers assigned to the ground stone forms from Site 40JK27 are included for future reference as in the chipped stone artifact section. However, a different typology is utilized to derive the numbers. Knowledge of the meaning of the numbers is not necessary to an understanding of the ground stone types.

Artifact types recognized in the assemblage include pitted stone, battered stone, abraded stone, celts, drilled "gorget," indeterminate fragments and a pipe fragment.

Pitted Stone

5 specimens

Type Category:

- 602000 pitted fragment (1 specimen)
- 600005 large pitted stone (2 specimens)
- 610007 pitted cobble (1 specimen)
- 610009 pitted cobble, edge battered (1 specimen)

DESCRIPTION: These stones exhibit depressions which penetrate their natural patination. They may have been used for cracking nuts or other shelled food stuffs, or they may have been utilized as anvils during the manufacturing process for chipped stone tools. One specimen exhibits edge-battering which suggests it may have been used also for crushing or hammering.

Battered Stone

38 specimens

Type Category:

- 600/602101 spherical battered stone (2 specimens)
- 600/612/622102 ovoid battered stone (from use) (3 specimens)
- 600/602103 ovoid battered stone (7 specimens)
- 600106 elongate battered stone with thin,

rounded end (2 specimens)
600/610109 sub-angular battered stone (6 specimens)
600/602110 angular battered stone (4 specimens)
600113 disc-shaped battered stone (1 specimen)
602/612199 battered stone fragments (13 specimens)

DESCRIPTION: These stones exhibit varying degrees of battering on one or more faces. They usually are only slightly modified from their original form; however, chert specimens may be considerably altered by the detachment of flakes from impact, and sustained use of any specimen may result in proportionally greater modification. Such artifacts may be used as hammerstones or for crushing, cracking or similar functions.

Abraded Stone

4 specimens
Type Category: 600/610700

DESCRIPTION: These are waterworn cobbles which exhibit marks resembling those associated with abrasion. The natural patination is worn through in these areas. They may have been used for a variety of tasks, including sanding wood implements (such as shafts), or any function where abrasion is necessary. One subtriangular piece of sandstone exhibits a wide (30.3 mm), shallow (3 mm) groove which traverses the stone's long axis.

Grinding Slab (tabular/boulder)

2 Specimens
Type Category: 603004

DESCRIPTION: One specimen is a flat, tabular piece of siltsone or fine-grained sandstone, roughly quadrilateral in original shape, with a smooth, ground side. Portions of the smooth side are stained with red color, possibly as a result of grinding hematite for pigment. Four fragments were refitted to form a nearly complete slab. The other specimen is a flat, roughly square smooth rock. Modification through grinding is difficult to distinguish but it is a convenient shape for grinding of soft materials or for use as a working board of some kind.

Possible Celt and Celt Fragments

8 specimens
Figure VI-88
Type Category: 622428/429 celt fragments (7 specimens)
621401 triangular celt (1 specimen)

DESCRIPTION: These artifacts are considered to be woodworking tools. The triangular celt is pecked on one face and exhibits polish on both faces of the distal end. It does not appear to have been completed; however, it may have been used in an unfinished form. The fragments appear to have once been part of celts, but they are too fragmentary to adequately determine their original morphology. One fragment is made from a material commonly referred to as "greenstone" and may be a classic Copena trade stem.

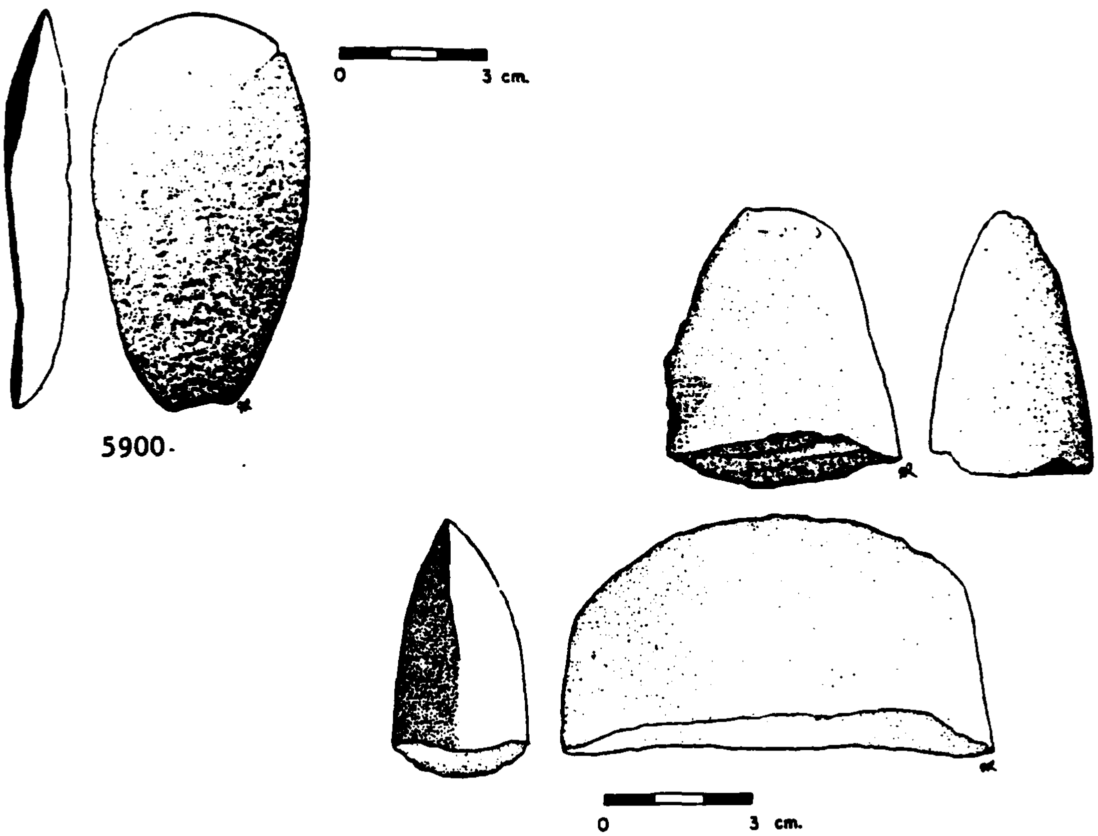


Figure VI-88. Possible Celt and Celt Fragments

Drilled Gorget Fragment

1 specimen
Figure VI-89
Type Category: 622830

DESCRIPTION: This fragment was apparently once part of a rectangular gorget with at least one and possibly two drilled holes. It is badly damaged, being broken on two edges and missing one of its faces. Based on the partially drilled nature of one hole, it appears probable that the artifact received its initial break during manufacture.

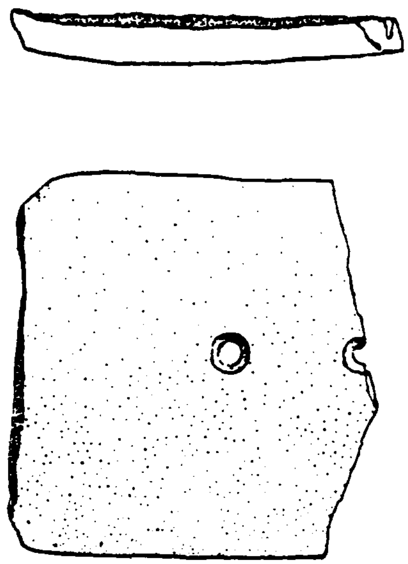


Figure VI-89. Drilled Gorget Fragment

Pipe Fragment

1 specimen
Type Category: 622860

DESCRIPTION: This is a small fragment of a pipe bowl made of sedimentary fire clay. It was included within collections made by previous investigators at Site 40JK27. It is of unknown cultural affiliation. Its fragmentary nature precludes indentification.

Miscellaneous Stone

As is common in most site excavations, quantities of stone in the form of fire-cracked rock, geodes, fossils and other miscellaneous categories were recovered. Since rock does not occur naturally on the site, the assumption is that all the rock has been brought into the site by cultural means. However, the reasons underlying their presence are not always clear. The major categories are listed below. Where a cultural function may be suggested, this is included beneath the appropriate category.

Fossils (Unidentified)

45 specimens
Type Category: 600889

Crinoid Fossils

42 specimens
Type Category: 600890

Geodes

10 specimens
Type Category: 600897

Spheroidal Stone Ball

1 specimen
Type Category: 600840

Steatite

1 specimen
Type Category: 000806

Ironstone

1 specimen
Type Category: 000720

Concretion

1 specimen
Type Category: 600891

Hematite Chunk

1 specimen
Type Category: 600894

Shale

18 specimens
Type Category: 000708

Ground Stone "Trowel" (Naturally Shaped)

1 broken specimen
Type Category: 601002

This artifact is a mushroom-shaped cobble which resembles pottery trowels found on late prehistoric sites. The large "cup" portion has a flat facet which appears to have been ground almost to a polish, possibly through cultural use.

Grinding or Polishing Cobbles

7 specimens
Type Category: 600/601003

These are waterworn cobbles which may have been used for a variety of grinding, smoothing or polishing functions. In particular, they appear suitable for some tasks associated with pottery production. Wear is difficult to discern although faint striations, polish and other atypical surfaces suggest use-wear.

Indeterminate Limestone Artifacts

17 specimens
Type Category: 600/601800

This category contains a variety of pieces of limestone which strongly suggest use in spite of a general lack of purposeful modification from their natural form. Three groups can be distinguished on the basis of shape. One group of six specimens are irregularly shaped flat cobbles, mostly of a fine-ground limestone but also including a gritty variety.

A second group of six specimens are triangular in shape; all but one are of the gritty limestone variety found elsewhere on the site. Two of this group are flat and equilaterally triangular; two are roughly pyramidal and the remaining two are small, elongate specimens. All have acute tips which resemble peaks.

The final group comprises five specimens which have flat, and elongate, oblong or rectangular shapes usually with a spatulate end. A variety of functions can be suggested for these artifacts including use as digging tools, in pottery productions, in lithic tool manufacture (platform preparation, soft hammer percussion, etc.) or the like.

Fire-cracked and Other Rock

Total Weight: 436,189 g

This rock is probably associated with day-to-day domestic activities such as cooking, use in hearths, etc. Recognition of heating effects was often very difficult due to the nature of the stone. However, the total weight of recovered rock indicates that substantial amounts were transported into the site for a variety of purposes.

Summary of Technological and Stylistic Trends in the Lithic Assemblage

Lithic artifacts constitute one of the largest data categories generated by excavations at the Hurricane Branch Site. Both chipped lithic and ground stone artifacts were recovered with the former representing the larger data set. A total of 1,145 chipped stone tools, tool fragments and preforms were collected along with 10,393 pieces of manufacturing debitage. Only 59 ground stone artifacts were recovered. This summary section will be principally concerned with the chipped lithic assemblage since it is the largest.

As mentioned in the introduction to this section, the chipped lithic artifacts were analyzed through use of a techno-morphological model which incorporates a reductive sequence of tool manufacture. Such a typology may provide valuable information concerning the representation of different reductive stages within an assemblage. As the model is operationalized in this study, information concerning the condition of breakage and rate of abandonment may also be gathered. Finally, morphological characteristics noted for each artifact category may be used to support techno-functional interpretations.

As with many studies, this one is hampered by some practical limitations that should be stated prior to presenting any conclusions. First, the constraints of time and funds precluded the detailed analysis of manufacturing debitage, particularly flakes. Therefore, the tools, tool fragments and preforms represent the principal data set from which trends may be suggested. This situation places considerable constraints on the interpretation of the lithic assemblage because "stone tools recovered from an archaeological context may largely represent unwanted discards which have undergone the process of manufacture, use, modification and disposal" (Jeffries 1982:99). Given the above, debitage may actually represent a more accurate indicator of prehistoric activity than the tools themselves. However, keeping that restriction in mind, general interpretations may still be attempted and offered as possible explanations of prehistoric behavior with the qualification that subsequent supportive analytical research would be necessary for verification. All interpretations suggested here should be considered as a springboard for further research.

Another practical difficulty is the occurrence of more than one cultural component at the site. As following chapters will demonstrate more clearly, the bulk of the excavations yielded data indicative of a Middle Woodland occupation with a minor Archaic component. While the purpose of this section is not to present a spatial distribution of the lithic artifacts, the discussion will treat the assemblage of each major temporal component separately. Chapter VII will detail the spatial patterning of the various data categories for each component. For purposes of comparison, the Woodland assemblage is derived from the combined lithic artifacts from Cultural Series 1B, 2B and 3B. The Archaic assemblage is represented by the combined lithic artifacts from Cultural Series 1C and 3C. The Cultural Series 1A, 2A and 3A are plowzone deposits of mixed cultural affiliation. They and all surface materials will be treated separately under the rubric "Surface Finds and Plowzone Deposits." Finally, Cultural Series 2C is a subsurface deposit of unknown cultural affiliation. The reader should refer to Chapter VII for an explanation and definition of the Cultural Series mentioned above. The present discussion will proceed from the earliest to latest components. Within each component, the discussion will be organized by Reductive Stages I-V, following the typology used in analysis.

<u>The Archaic Component</u>

Only a small sample is available for this component. Chipped tools or preforms from Archaic deposits total 91 specimens. All reductive stages are represented in varying proportions.

Reductive Stage I - Acquisition of Raw Material

This stage is minimally indicated by the occurrence of 23 pieces of unmodified raw material suitable for chipped tool manufacture. Therefore, one may assume that some rock is being transported to the site, since none occurs in the immediate area.

Reductive Stage II - Initial Reduction

Artifacts associated with this reductive stage include 75 cores, one chopper, one uniface and four biface fragments. The cores include only four aborted specimens, representing 5% of the Archaic total.

The chopper and uniface are tools typical of purportedly early prehistoric pebble tool complexes as described by Lively (1965); however, such tools occur in later contexts as well.

The single biface for which general shape and basal morphology is determinable falls within an ovate form with round base. Two fragments also have round bases and may be from ovate forms as well. These fragments were all abandoned often being broken during manufacture; therefore, one may assume that these artifacts are discards. At this early stage of reduction, it is difficult to determine whether these bifaces were to be preforms or tools.

Reductive Stage III - Primary Flaking

Artifact categories increase substantially in this stage. They include a total of 27 modified flakes of various types, six unifaces or uniface-bifaces, and 31 bifaces or biface fragments.

The ratio of marginally to systematically modified flakes is nearly equivalent. Systematically modified flakes are most numerous, numbering 15 of the total 27 specimens. Subtypes within this category include two notched, seven excurvate edged, two incurvate edged and three straight edged specimens. This distribution suggests a somewhat greater emphasis on the use of these tools for cutting and scraping or planing.

The unifaces vary in form from ovate to quadrilateral, the latter having steep end retouch (one specimen) and the former (two specimens) having circumferential retouch (steep and shallow beveling on the two respective specimens). Three unidentifiable fragments, one from a uniface and the others from uniface-bifaces, complete this category of scraping implements. Judging from the comparative frequencies of modified flakes and unifaces, little emphasis was placed on producing a more complex form when a modified flake would suffice.

The bifaces exhibit considerably greater diversity over the preceding stage. Forms expand to include triangular as well as ovate forms. The triangular forms dominate this stage with only one ovate biface with round base representing a continuing form from the Initial Reduction Stage. This specimen was abandoned during manufacture.

Excluding unidentifiable fragments, the triangular bifaces exhibit mostly straight bases with round or angular corners. Basal fragments also follow this pattern. Interestingly, midsections are virtually absent (except for one) but tips or corners are relatively numerous. Three of the bifaces were aborted during manufacture, suggesting biface production on the site, possibly for preforms.

Reductive Stage IV - Secondary Flaking

Projectile points, drills and bifaces are represented in this reductive stage. The eight bifaces are all too fragmentary for general shape to be inferred; however, four fragments have straight bases and may represent more reduced versions of forms discussed under the preceding reductive stage.

Projectile points number 11 specimens, comprising at least six styles. Archaic points represented in this component include early types such as a Kirk, a LeCroy and a Pine Tree, and Middle and/or Late Archaic forms such as Morrow Mountain (Round Base, Elongated) and Big Sandy; a single Copena point fragment and two Copena Triangular fragments also occur but are probably late intrusions. Judging from the point types, the bulk of the Archaic use of the site probably took place early in the period. Subsequent disturbance probably accounts for the later forms in these deposits.

The only other tool in this stage is a single drill fragment, for which no type could be assigned.

Reductive Stage V - Reworking/Rejuvenation

A single reworked fragment of an unidentified expanded stem point was recovered from the Archaic component. It has been recycled into a scraper. No affiliation can be assigned to this specimen.

Ground Stone

Ground implements are sparse for the Archaic component. Only eight specimens fall within this category. Four specimens are battered stones which may be used for a multiplicity of tasks requiring hammering, basning or crushing. A pitted cobble and a large pitted stone may be connected with nut processing but may have also served other purposes. A single grinding slab exhibiting red staining may have been used as a palette for grinding red ocher or other dye stuffs. Finally, an abraded stone (which is usually associated with such tasks as preparing shafts for spears or arrows) was recovered. None of these tools exhibit any purposeful shaping prior to use.

Cultural Series 2C (Unknown Affiliation)

Interpretation of the lithic assemblage from this component is severely hampered by the paucity of artifacts. Only 16 chipped lithic artifacts (excluding flakes and chunks) were recovered.

No evidence is available for acquisition of raw material (Reductive Stage I). Initial reduction is indicated by seven cores, one of which is aborted.

Primary flaking is indicated by three marginally modified flakes (one with a straight and one with an incurvate edge) and one biface basal fragment of indeterminate morphology.

Secondary flaking is indicated by a biface midsection and a biface tip or corner. No evidence of Reworking/Rejuvenation was recovered nor are ground stone implements in evidence for this component. In light of this paltry inventory, no interpretations will be attempted.

The Woodland Component

The Woodland component yielded 238 tools and preforms (including fragments), 253 cores and 19 pieces of raw material.

Reductive Stage I - Acquisition of Raw Material

Very little can be discussed concerning this stage since no chert resource analysis was carried out. However, the presence of 19 pieces of raw material suitable for chipped tool manufacture demonstrates that some unmodified pieces were brought in since no chert is immediately available on-site. Local sources appear to have been primarily used, judging from a brief qualitative examination.

Reductive Stage II - Initial Reduction

Evidence for this stage is observable in a total of 253 cores, two unifaces and 11 bifaces. The aborted cores represent 7% of the total cores collected for this component.

Initial reduction tools intended for immediate use include both of the unifaces. Their beveled working edges suggest a predominant scraping or possibly chopping function.

The bifaces may have been used at this stage or intended as preforms. Six of the bifaces or biface fragments have rounded bases and vary in shape from ovate to triangular. Three specimens have straight bases with angular or round corners and are all triangular in shape. The remaining are indeterminate fragments. It is interesting to note that eight of the 11 specimens were abandoned during manufacture (this number includes both broken and intact specimens). This high abandonment rate suggests that these bifaces may be discards and that initial reduction biface production in general was geared toward the production of preforms. Successfully chipped initial reduction preforms would logically be further modified; therefore, their potential for survival at this stage would probably be low. Initial reduction bifaces account for only 9% of the bifaces in the Woodland component.

Reductive Stage III - Primary Flaking

Cultural materials from this stage include 45 modified flakes, six unifaces, One uniface-biface and 46 bifaces. An increase from the previous stage is notable for tools which are put into immediate use once they have reached this stage. The largest category of these is modified flakes. Regardless of the stage of reduction which produced them, modified flakes are placed in primary flaking because only minimal modification of the working edge has taken place, and no purposeful shaping of the flake is evident although flake shape may have been a factor in its selection for use. Only 17 of the specimens are marginally modified; that is, the modified edge may have been produced through use without prior retouching, or even through noncultural means. The majority of the specimens have been purposefully and systematically edge-modified, probably for a specific, short-term task. Only one specimen has an acute tip as in a graver. Eight specimens have incurvate or notched edges similar to forms referred to as "spokeshaves" in the archaeological literature. The remaining examples have excurvate or straight retouched edges which may have been used for cutting, slicing, or possibly scraping.

The number of modified flakes is in rather marked contrast to the six unifaces and the uniface-biface. These tools represent more complex forms than modified flakes, requiring more carefully controlled chipping geared toward a specific shape and working edge. Excluding three indeterminate fragments, the remaining unifaces are all different, including two ovate forms with shallow side and steep end retouch respectively and a quadrilateral form with steep side retouch. Finally, a quadrilateral uniface-biface with circumferential shallow retouch was recovered. All of these tools are generally interpreted as scraping implements; however, they may have been used on different materials, and they also may have been multifunctional. Their low numbers relative to the modified flake frequency may be indicative of an emphasis on tasks for which an unmodified flake, quickly retouched, fulfilled the need and less emphasis was placed on tasks requiring more complex tools.

A relatively high frequency of bifaces, representing a substantial increase from the previous reductive stage, were recovered. They occur in both ovate and triangular forms with a variety of basal characteristics. Notably, for the 17 bifaces in which shape and basal distinctions could be discerned, 10 specimens were abandoned during manufacture. Only two specimens are intact with no evidence for abandonment and the rest are fragments. The majority (13) of these specimens are triangular in shape and the most common basal shape is straight with either round or angular corners. Several of the aborted specimens exhibit a knot on the midsection of one surface; however, these appear to be the result of manufacturing error rather than purposeful manufacture as has been suggested for similar smaller specimens described by Munson and Munson (1972).

A minor basal type is a rounded shape occurring in two ovate and two triangular specimens. Particularly the ovate specimens are vaguely reminiscent of the preforms for such broad bladed projectile points as Snyders and Manker (Montet-White 1968:42); however, they may also be easily modified into other forms.

Notably, the primary flaking bifaces appear to be more reduced, refined versions of similar, but less easily chipped bifaces in the initial reduction stage. This endurance of general shape and basal forms and the prevalence of abandoned specimens may be taken as further evidence for a biface technology geared toward preform-to-tool production.

Reductive Stage IV - Secondary Flaking

Cultural artifacts assignable to this stage include 37 bifaces, 33 projectile points and four drills.

The 32 biface specimens are small fragments, mostly midsections, tips or corners. Basal fragments for which general shape could not be discerned number only five but their morphology mirrors more complete specimens, particularly in Primary Flaking, by exhibiting straight or rounded bases.

Other specimens include a triangular form with a straight base and angular corners which probably is a preform. Another triangular form with an incurvate edge also occurs. It probably was discarded when a transverse fracture diminished its length by about half. Whether this fracture occurred during manufacture or use is not clear; however, the specimen appears suitable as a preform for point types such as Candy Creek.

Finally, three lanceolate-form bifaces with square ground bases occur for the first time. Similar forms are included in Faulkner and McCullough's McFarland Cluster; however, they are not unique to this cultural complex. They may have been intended for use as tools as one exhibits wear. No obvious predecessors in previous reductive stages were recognized for this form whose length is considerably longer than that of most bifaces.

Among the projectile points, 20 individual types were recognized. As is common in many sites, a few points referable to other time periods occur in the Woodland deposits. The following table groups the point types in this component by major time period.

As the Table VI-1 and VI-2 indicates, the majority of points fall within the Woodland Period, particularly the Middle Woodland. With a few exceptions, the predominant Woodland influence appears to be southerly, particularly the McFarland/Owl Hollow cultural sequence delineated by Faulkner and his colleagues in the Duck River Valley. Two major lithic technologies are notable for the Early and Middle Woodland types. One is devoted to the production of lanceolate or triangular types such as Copena, Copena Triangular and Candy Creek. These point types are associated with the Copena culture of northern Alabama but also have similarities to forms recognized in Normandy Reservoir and associated with the McFarland Phase. While the association between McFarland and Copena peoples is far from clear, contemporaneity or temporal overlap of the two groups is probable. The Copena culture has been referred to as the "Southern Hopewell" because of the rather opulent burial associations in the mounds. Definition of the Copena culture suffers because of a lack of sufficient information concerning occupational sites. The McFarland Phase is not clearly linked to a ceremonial complex but is known best from occupation sites. However, the close morphological similarity of the two "types" and their reported co-occurrence at numerous sites in Kentucky and Tennessee would appear to support a cultural connection. While the name Copena has been used for specimens in this report, they may be more aptly named Copena/McFarland since the similarity is

Table VI-1. Projectile Point Types from the Woodland Deposits.

Early Archaic -		
	Expanded Stem 69 (Palmer)	1 specimen
	Side-Notched 27 (Rowan-like)	1 specimen
Late Archaic -		
	Straight Stem 27 (Wade)	2 specimens
	Straight Stem 29	1 specimen
	Contracted Stem 6 (Pickwick)	1 specimen
Late Archaic/Early Woodland Transition -		
	Expanded Stem 15 (Mud Creek)	1 specimen
	Contracted Stem 5 (Adena-like)	2 specimens
	Contracted Stem 28 (Gary) (Gary type continued to Middle Woodland)	1 specimen
Early Woodland -		
	Contracted Stem 30 (Dickson)	1 specimen
	Triangular 9 (Nolichucky) (Nolichucky type is possibly Late Woodland)	1 specimen
Early/Middle Woodland -		
	Lanceolate 7 (Copena)	1 specimen
	Triangular 12 (Copena Triangular)	2 specimens
	Triangular 13 (Candy Creek)	1 specimen
Middle Woodland/Late Woodland -		
	Side-Notched 28	4 specimens
	Side-Notched 29	6 specimens
	Side-Notched 30	2 specimens
	Side-Notched 32	2 specimens
Late Woodland -		
	Expanded Stem 98	1 specimen
Late Prehistoric		
	Triangular 1 (Madison)	1 specimen
Unknown -		
	Straight Stem 5	1 specimen

Table VI-2. Projectile Point Styles in Surface/Plowzone Contexts.

Early Archaic -	
Bifurcated 1 (LeCroy)	1 specimen
Side-Notched 27 (Rowan-like)	1 specimen
Contracted Stem 24 (Morrow Mountain; Straight Base)	1 specimen
Bifurcate 13 (Stanly Stemmed)	1 specimen
Expanded Stem 85 (Lost Lake)	1 specimen
Middle Archaic -	
Contracted Stem 26 (Morrow Mountain; Round Base)	5 specimens
Contracted Stem 27 (Morrow Mountain; Round Base, Elongated)	1 specimen
Middle Archaic/Late Archaic -	
Contracted Stem 6 (Pickwick)	4 specimens
Expanded Stem 94	1 specimen
Side-Notched 1 (Big Sandy)	2 specimens
Side-Notched 9 (Brewerton Side-Notched)	1 specimen
Contracted Stem 22 (Eva II)	1 specimen
Late Archaic -	
Straight Stem 1 (McWhinney-like)	2 specimens
Straight Stem 19 (Ledbetter)	3 specimens
Generalized Archaic to later times -	
Expanded Stem 27 (Motley)	3 specimens
Late Archaic/Early Woodland -	
Straight Stem 32	1 specimen
Expanded Stem 15 (Mud Creek)	2 specimens
Expanded Stem 25 (Flint Creek-like)	4 specimens
Contracted Stem 5 (Adena-like)	3 specimens
Straight Stem 27 (Wade)	2 specimens
Straight Stem 28 (Little Bear Creek)	1 specimen
Expanded Stem 16 (McWhinney-like)	3 specimens
Early Woodland -	
Triangular 14 (Flint River Spike-like)	1 specimen
Straight Stem 15 (Montgomery Stemmed)	2 specimens
Triangular 9 (Nolichucky) (Nolichucky type may be Late Woodland instead)	3 specimens
Lanceolate 7 (Copena)	1 specimen

Triangular 12 (Copena Triangular)	27 specimens

Middle Woodland -

Expanded Stem 70 (Manker Corner-Notched)	1 specimen
Straight Stem 30 (Coosa)	1 specimen
Expanded Stem 84 (Manker Stemmed)	1 specimen
Expanded Stem 40 (Snyders)	1 specimen

Middle Woodland/Late Woodland -

Side-Notched 28	14 specimens
Side-Notched 29	5 specimens
Side-Notched 30	2 specimens
Side-Notched 32	4 specimens
Expanded Stem 26 (Jack's Reef)	1 specimen
Expanded Stem 74 (Lowe)	1 specimen

Late Woodland -

Lanceolate 12 (Guntersville) (this type extends into Mississippian times)	5 specimens

Generalized Woodland -

Lanceolate 13 (Benjamin)	1 specimen
Contracted Stem 29	1 specimen
Expanded Stem 98	3 specimens
Contracted Stem 25 (New Market)	2 specimens

Late Prehistoric -

Triangular 2 (Fort Ancient)	1 specimen

Unknown -

Straight Stem 17	4 specimens
Straight Stem 5	4 specimens
Straight Stem 26	1 specimen
Expanded Stem 97	2 specimens

so close.

The other major technology for the Early/Middle Woodland occupation is devoted to the production of side-notched forms as exemplified by the Side-Notched 28-30 and 32 in this report. These types are very similar to those described by Faulkner and McCullough (their types 61-65) and related to the Owl Hollow Phase in the Normandy Reservoir. Radiocarbon dates from Normandy place Owl Hollow types later than the Copena/McFarland cluster. All of the examples for these types could have been manufactured from triangular preforms, particularly those with straight bases. The length of the intact specimens ranges from 35-62 mm, width from 15-20 mm and thickness from 6-10 mm. These measurements are well within or well under the range of measurements for surviving primary flaking triangular bifaces with straight bases.

A final issue with regard to projectile points is to reconcile the presence of point types dating to temporal periods other than the Middle Woodland within the component. These specimens number 14 and include 12 types. Numerous explanations, most of them equivocal, inadequate, or untestable, may be offered for the occurrence of temporally distinct point styles, including curation and possible re-use by the Woodland inhabitants, mixing due to natural agents or typological ambiguity. For instance, two points, a Palmer and a Rowan-like, have been placed in the Early Archaic Period. However, the dating of these types is not secure. They also share morphological similarities with the side-notched varieties noted for the Owl Hollow. These traits may have attracted the later Woodland inhabitants who re-used them.

Nine specimens represent Late Archaic or Late Archaic/Early Woodland types. The proliferation of projectile point styles in the Late Archaic is a well-documented phenomenon. While, by Early Woodland times, certain point types (such as Adena) gained prominence in many areas, there is no reason to suspect that variability ceased to continue. In fact, the so-called Adena point type exhibits considerable variability and many contracted stem styles (such as Gary, Dickson, etc.) exist which are similar. These may have been used up to and probably into the Middle Woodland. Another example of typological ambiguity coupled with imprecise dating is the Nolichucky style which is considered Early Woodland by Lewis and Lewis (1957) and Late Woodland by Cambron and Hulse (1975:98). A broad temporal spread is also in evidence for the Madison style. Therefore, while the presence of these point types implies a mixed assemblage, the combined effects of natural mixing agents, prehistoric behavior and modern analytical and interpretive ambiguities may be cited as a possible explanation.

The final tool category to be discussed under Secondary Flaking is drills. Four examples comprising one type and three unidentifiable fragments are available for study. The drill type, for which one intact specimen was recovered from Woodland deposits, is a micro-tool that is essentially identical to those found in the Owl Hollow Site. Therefore, its occurrence in the Woodland deposits is in keeping with the temporal placement of the component.

Reductive Stage V - Reworking/Rejuvination

Only one instance of a reworked artifact is associated with the Woodland deposits. Interestingly, the specimen is an Early Archaic Palmer projectile point which has been chipped into a scraper. This specimen, along with the broken Palmer point in the component, suggests that the Woodland inhabitants may have been re-using these artifacts.

The lack of other evidence of reworking or rejuvination may be indicative of a short-term stay in which tool maintenance was not stressed. Evidence of this stage is paltry for the site as a whole and for the Woodland component in particular.

Ground Stone

Some mention should be made of the few ground stone artifacts associated with the Woodland component. These include seven specimens of battered stone, two pitted specimens (one with edge battering), four celt fragments and one drilled gorget fragment. The battered stone probably had multiple uses including use as a hammerstone for flake detachment, bashing or crushing tasks associated with food preparation, pounding stakes or numerous other possibilities. Pitted stones are usually associated with nut processing but such items may also be used as anvils. Celts are usually associated with woodworking. The gorget fragment is also of uncertain function. Gorgets have been identified as ornaments, atlatl weights and ceramic making tools. Two-holed gorgets are a trait of the early Owl Hollow Phase.

Surface Finds and Plowzone Deposits

The lithic assemblage from surface and plowzone contexts is a conglomeration of mixed cultural components. Therefore, conclusions regarding technological trends are hampered by an inability to discern clear artifact associations within temporally distinct archaeological components. However, it is expected that most of the assemblage relates to later occupations since these components were laid down in deposits which have subsequently been churned up and mixed through plowing.

Reductive Stage I - Acquisition of Raw Material

As with the other components discussed above, only the presence of unmodified raw material is indicative of this stage. A total of 55 pieces of unmodified raw material was recovered from the surface and in the plowzone. This suggests that some transportation of potentially chippable material to the site was taking place.

Reductive Stage I - Initial Reduction

Initial reduction is indicated by 605 cores (574 normal and 31 aborted specimens), nine unifaces and 10 bifaces or biface fragments. Approximately 5% of the cores are aborted, a proportion which is comparable to the rates in other components and for the core assemblage as a whole.

Biface categories are similar to previously discussed forms, which are made up of ovate and triangular forms with straight and round bases. Triangular forms slightly predominate, numbering three specimens to two ovate forms. The number of straight bases to round bases is exactly reversed (2:3). Three specimens are aborted discards, following the previously noted pattern of abandoned specimens being most likely to be discarded at any given stage of reduction.

Four bifaces were probably used as tools. These include three backed specimens and one elongated specimen. Both are interpreted as hand-held tools. The remainder are indeterminate fragments.

The unifaces within this stage are typical of those discussed for the Woodland and Archaic components. Such tools have a long history of use and are not particularly diagnostic of any specific temporal period.

Reductive Stage II - Primary Flaking

A relatively large and varied assemblage of tools and preforms falls within this stage. The artifacts include 257 modified flakes, 21 unifaces or uniface-bifaces, 174 bifaces or biface fragments, and two hoes.

Modified flakes again constitute the largest proportion of tools and include all subtypes previously discussed. Frequencies of these subtypes include 54 marginally modified, 12 acute-tipped, 14 notched, 28 excurvate-edged, 15 incurvate-edged and 49 straight-edged specimens. This distribution is similar to the Woodland component and follows the pattern of simple flake tools being used predominantly.

The unifaces exhibit greater variability than previously seen in the other components. Forms include ovate, triangular and quadrilateral shapes with a variety of edge treatments. Five specimens (encompassing all three forms) exhibit steep (three specimens) or shallow (two specimens) side retouch. Steep end retouch is evident on a single ovate form. Five forms exhibit circumferential steep (two specimens) or shallow (three specimens) retouch. One ovate uniface-biface with shallow side retouch was also recovered, along with eight fragments.

Bifaces include most of the previously discussed forms. The distribution of ovate and triangular forms is roughly equivalent, numbering 21 and 26, respectively. In combination, triangular straight-based specimens number 18; triangular round-based forms include seven specimens; ovate, round-based specimens number 17 and ovate straight-based specimens number four. The predominant combinations of the triangular straight-based and ovate round-based types are suggested to represent specific preforms from which a number of related projectile point types could be manufactured. The former type may be particularly suitable for side-notched or expanding stem types while the latter are probably better suited to corner-notched, broad-bladed types.

Two "hoes" are also associated with the plowzone/surface assemblage. One specimen is a chipped chert quadrilateral form in which polish from use has nearly eradicated the flake scars in its medial portions. The other specimen is quite different, being much larger and minimally chipped from a flat, triangular piece of highly weathered chert. Both specimens were probably hafted. Similar roughly-shaped implements made from shale or limestone have been reported in Late Archaic Wade and early Middle Woodland McFarland contexts at the Nowlin II and Wiser-Stephens Sites in the Normandy Reservoir, Tennessee (McCollough and Faulkner 1978).

Reductive Stage IV - Secondary Flaking

Artifacts associated with this stage include 132 bifaces or biface fragments, 160 projectile points (including 51 recognizable types) and 11 drills.

Bifaces for this stage comprise mostly fragments, particularly tips and corners (62 specimens) and midsections (29 specimens). Twenty-nine basal fragments (20 straight, five round and four indeterminate) also occur. The bifaces for which both general form and basal morphology can be discerned include 10 triangular straight-based forms and one triangular round-based specimen. Four of these specimens were broken in manufacture. One bipointed biface which resembles a wedge was also recovered.

Projectile points associated with surface/plowzone contexts are quite deverse in type. Table VI-2 lists the recognized projectile point types by temporal period and frequency. Every prehistoric period with the exception of Paleo-Indian is represented. The Archaic is minimally represented by 28 specimens (excluding those dating to the transition to Early Woodland). Most of the specimens (107) date from the Late Archaic/Early Woodland transition through the late prehistoric period. Of this group, 66 specimens refer to the Early and Middle Woodland periods.

The diversity of types suggest contacts with other areas. The Archaic types suggest principal contacts with the southeastern United States in general, and the Tennessee River Valley specifically to the south and west; however, more northerly types indicate affiliations in this direction as well. This pattern continues into the Woodland; however, southerly contacts or influences appear to increase during this period. In particular, affiliations with the McFarland and Owl Hollow phases in the Tennessee River Valley are apparent. Also occurring are projectile point types which relate to Illinois Valley developments. These include the single Lowe point which is related to the La Motte and Allison cultures (Winters 1967:47, 52) and the Manker Corner-Notched, Manker Stemmed and Snyders points which are diagnostic of Illinois Valley Hopewell sites (Montet-White 1968:114-125). These points are not numerous but their presence lends strength to Winters' (1967:54, 64) suggestion that the La Motte and possibly the Allison cultures are affiliated with southerly groups, particularly those represented by McFarland/Owl Hollow material culture. The placement of the site relative to regional cultural developments will be more specifically delineated in Chapter VII.

Drills comprise the final chipped tool category to be discussed. Seven drill types comprising eight specimens and two fragments constitute the category. All but Drill 21, which is a micro-tool, are rather heavy-duty piercing implements. They may have been hafted. Cultural affiliation is not clear for most of the types. Drill 5, exhibiting a flared base, has been identified at Indian Knoll; however, its temporal placement is uncertain. Drill 25 is typical of the Owl Hollow Phase. The remainder are of unknown affiliation. Only two drills are intact. The others are fragmentary and probably were broken during use as the fracture is along the shaft in all cases.

Reductive Stage V - Reworking/Rejuvenation

Only five specimens can be assigned to this stage. All of these are projectile points which have been reworked into scrapers. Two are unidentifiable to type; but, interestingly, two others, a Palmer and a Morrow Mountain Straight Base, are Early Archaic points which have been later reworked.

One may recall that a reworked Palmer point was also recovered from the Woodland deposits. The other specimen is a reworked Hamilton Stemmed point which is reportedly Late Woodland. It may have reworked by late prehistoric occupants of the site.

Ground Stone

A mere 29 ground stone tools were recovered from surface/plowzone contexts. This low frequency is indicative of the general paucity of ground stone implements at the Hurricane Branch Site.

Twenty-one specimens fall within various categories of battered stone. These implements are probably multipurpose and require little or no shaping prior to use. Four specimens are abraded stone which also require little or no preparation for use.

The only tools which evidence purposeful manufacture include a small triangular form which appears to be unfinished and three celt fragments in which morphological details cannot be discerned. This collection along with the ground stone assemblage in general suggests that ground stone tool-making was virtually absent for most of the site's occupational history.

Conclusions

The foregoing has discussed the lithic technological patterns for each cultural component recognized at the Hurricane Branch Site. In general, although the site yielded artifacts diagnostic of Early Archaic through late prehistoric times, the major occupations appear to have taken place in the Woodland Period, particularly during the Middle Woodland. In particular, affiliations with the McFarland/Owl Hollow sequence recognized in the Tennessee Valley to the southwest are notable. A minor Early Archaic component is also indicated.

Lithic patterns indicate an emphasis on the primary and secondary flaking reductive stages of the lithic technological sequence and a de-emphasis on the initial reduction and reworking/rejuvenation stages. The manufacture of bifaces, at least for the Woodland component at the site, is suggested to be geared primarily toward the production of preforms from which projectile points may be made. Specific preforms are suggested as comprising triangular, straight based forms and ovate, round based forms, although others may also have been produced. Side-notched and expanded stem point types may have been manufactured from the triangular preforms. Ovate forms more likely produced corner-notched, broad-bladed forms. An interesting minor pattern is the reworking of earlier projectile points, particularly those from the Early Archaic, for use as scrapers. Further research would be necessary to verify the validity of these conclusions since the present analysis only suggested but did not validate. A minor proportion of bifaces was produced for use as tools with no intent of further modification.

Other tools such as unifaces were manufactured in minor quantities; however, the emphasis appears to have been placed on less complex forms such as modified flakes which could have performed the same functions. These tools were probably used in a variety of tasks of short-term duration.

Ground stone implements occur in very minor quantities and emphasis on their manufacture and use is not indicated. Most of the ground stone implements are tools which can be extracted from the environment and used essentially in their original form without prior modification. Most of the ground stone artifacts appear to be bashing, crushing or hammering tools with very few grinding implements.

In fact, in both the Archaic and Woodland assemblages, the lithic assemblage is quite simple. Functional interpretations are difficult because of the rather limited inventory and low diversity of tools, many of which were probably multifunctional. Qualitatively, one may postulate that the paucity of scraping tools and the rather low frequency of projectile points (relative to the numbers encountered at other sites) suggests a de-emphisis on hunting. While there is no strong evidence in the form of milling or grinding implements for plant preparation, the lithic assemblage may have been used for plant manipulation such as clearing vegetation, shredding vegetal foods, preparing ground for planting or the like.

Little or no indication of ornamentation (with the possible exception of the gorget fragment) or ritualistic objects were recovered. The lithic assemblage in general suggests relatively noncomplex occupations devoted to a few key tasks, in no way the same level of intensity as a large, intensively occupied village. While the tasks and duration of stay may have differed for the various time periods, at no time is a highly intensive occupation of long duration indicated.

Ceramics

by
A. Gwynn Henderson

A total of 7,871 sherds were recovered from both surface and subsurface contexts at the Hurricane Branch Site (40JK27). Sherd size for the assemblage as a whole was rather small, (on the average, about 4 square centimeters) and this factor hampered description of such attributes as vessel shape, location of decoration and the like.

In order tc prevent smaller nondescript sherds from biasing the analysis, only sherds larger than 1 square centimeter were analyzed. This resulted in the selection of 2,727 sherds for analysis. Schroedl (1978b:80-82) and Chapman (1975:67-71) have used a similar type of selection criterion based on sherd size in their analyses of ceramic collections from the Patrick and the Rose Island sites respectively in eastern Tennessee. The remaining 5,144 sherds (65% of the total collection) were grouped by excavation square, counted and recorded analysis of ceramic density across the site.

In this section, no attempt will be made to identify, examine or interpret the location of particular ceramic types, either horizontally or vertically. Information pertaining to the association of ceramic types with other ceramic types, features and other artifact material classes will be presented in Chapter VII. Instead, this section presents a description of the ceramic assemblage recovered from Site 40JK27, which focuses on 1) the identification of ware groupings and 2) the identification of ceramic types within each ware group. Ware groups were primarily determined on the basis of primary tempering materials, although in the case of one group, paste inclusions were also used in determining the ware group. Five ware groups were identified. Types were defined from within the ware groupings based on surface treatment. Twelve ceramic types were identified from the ceramics which were selected for analysis (see Table VI-3).

Additionally, 1,048 pieces of fired or burnt clay and 62 pieces of daub were recovered from subsurface contexts. In analysis, these materials were treated like the small, nondescript sherds: they were simply counted and recorded

Table VI-3. Ceramic Ware Groups, Types, and Their Frequencies from Site 40JK27.

Artifact Category Number	Ceramic Ware Groups		Published Type Name	Frequency
	Limestone Tempered			
801010	Type 1	Plain	(Mulberry Creek Plain) (Hamilton Plain)	1566
801030	Type 2	Simple Stamped	(Bluff Creek Simple Stamped)	421
801050	Type 3	Check Stamped	(Wright Check Stamped)	58
801040	Type 4	Complicated Stamped	(Pickwick Complicated Stamped)	7
801020	Type 5	Cordmarked	(Candy Creek Cordmarked) (Hamilton Cordmarked)	73
801080	Type 6	Incised		10
801060	Type 7	Net Impressed (?)		1
801001		Unidentified Surface		42
801000		Residual		320
	Limestone Tempered with Micaceous Paste			
801111	Type 8	Plain	(Keys Plain)	21
801100		Residual		1
	Shell Tempered			
803010	Type 9	Plain		107
803000		Residual		89
	Quartz Tempered			
805011	Type 10	Plain		4
805000		Residual		1
	Sand Tempered			
806011	Type 11	Plain		2
806030	Type 12	Simple Stamped		1
		Residual		3
			Total Analyzed	2727
800000–800009	Unanalyzed			5144
			Grand Total	7871
810000	Fired or Burnt Clay			1048
820000	Daub			62
------	Miscellaneous			1

for use in the spatial analysis. Interpretation of the horizontal and vertical locations of the daub and burnt clay as well as their associations with other artifact material classes and features at Site 40JK27 will be discussed in Chapter VII. Discussion of these materials will follow the ceramic type descriptions.

LIMESTONE TEMPERED PLAIN
<u>Mulberry Creek Plain</u>, <u>Hamilton Plain</u>)
63 rims, 1,503 body sherds
Figure VI-90 and VI-91
TYPE CATEGORY 801010

This ceramic type occurs most frequently at Site 40JK27. It is tempered with crushed limestone which has almost always been leached out. This leaves angular holes in the paste of each sherd, ranging in size from fine (less than .5 mm in diameter) to large (up to 2 mm in diameter). Temper density is variable; however, all sherds appeared to have at least moderate amounts of temper. No sherd appeared to be untempered and many exhibited relatively high temper densities (perhaps as much as 60-75% of the paste). The paste hardness ranges from fairly hard to very crumbly. Paste hardness may be related to the leaching out of the tempering particles, such that with the temper removed, little was left to hold the sherd together.

About 20% of the sherds included in this type have additional particles in the paste: usually small round sand-sized red rock fragments, or small sand-sized angular white rock fragments. Well-rounded quartz sand is also present in some instances, as are occasional fossils, medium-sized angular quartz particles, and (rarely) a small chert flake. Whether or not these particles are secondary tempering materials or simply inclusions in the paste could not be determined conclusively. However, it seemed advisable to treat these particles as inclusions, since as many convincing arguments could be made for creating additional ware groups as for viewing them as inclusions.

Exterior surface finish is generally smooth, and plain-matte. Occasionally the exterior surface is very well smoothed, although it is never so smooth as to be polished. Exterior surface color ranges from dark brown or very dark grayish brown (10YR4/3 or 10YR3/2) to yellowish-brown or reddish-brown (10YR5/4 or 5YR5/4). Interior surface finish is also generally smooth and plain-matte, although it is sometimes poorly smoothed and plain-matte. Interior surface color ranges from black or very dark grey (10YR2/1 or 10YR3/1) to reddish-brown or yellowish-red (5YR4/3 or 5YR4/6). Sherd thickness ranges from 4-12 mm with an average thickness of 7.5 mm. A number of sherds indicate coiling as the method of vessel manufacture.

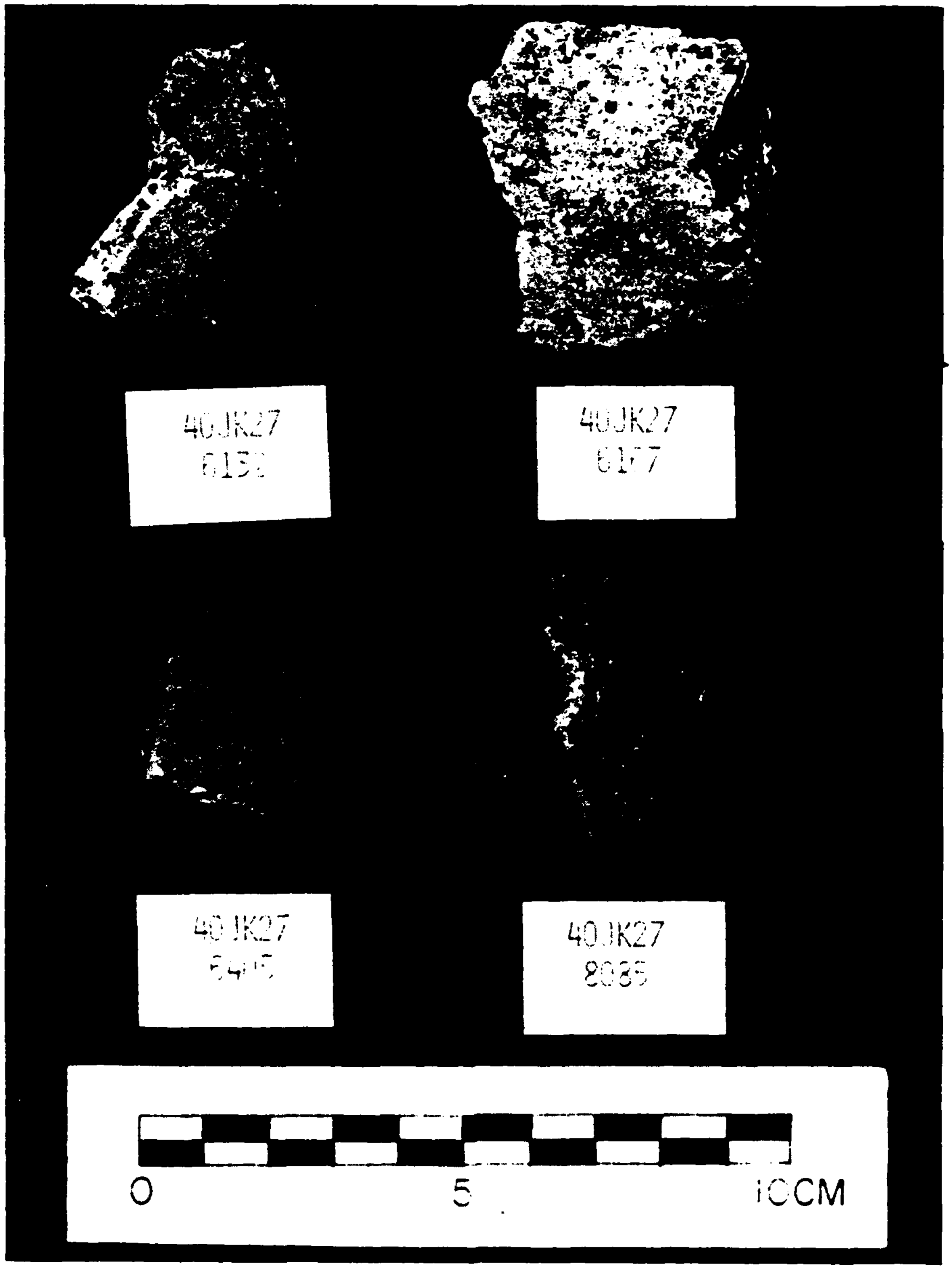


Figure VI-90. Limestone tempered plain ceramics (#801010).

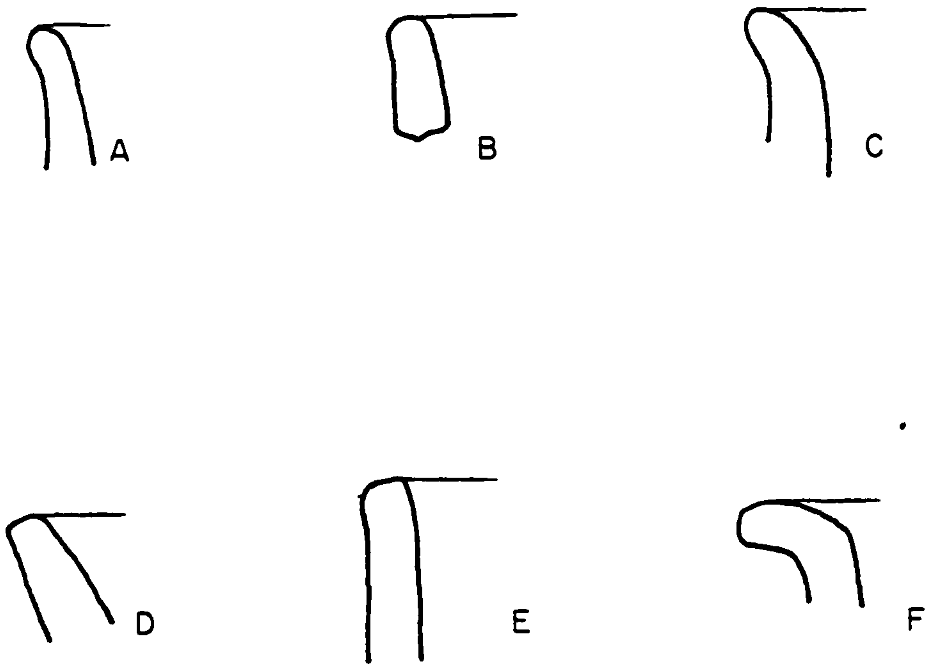


Figure VI-91. Limestone tempered plain rims. A. #7377, B. #7557, C. #6187, D. #6317, E. #6733, and F. #5701.

No complete ceramic vessels of this type were recovered from Site 40JK27. Although a few sherds could tentatively be identified as base or neck fragments based on sherd thickness and sherd curvature, vessel form could not be described for this type. One sherd appears to be the remnant of an angular shoulder but this cannot be verified. No supports were identified for this type from this assemblage.

Sixty-three rims were included in this type (Figure VI-91). Rims are generally slightly to moderately outflaring, although a few direct rims are present. In a few cases, a very outflared, rounded lip forms an almost flanged rim. In several instances, rims taper to the lip. Most lips are rounded or flattened. A few flattened lips are notched. Notches are usually 2-3 mm wide, and can be either very deeply or moderately deeply impressed into the lip.

Sherds in this collection do not have the decoration on the rim and shoulder described by Haag (1939:10) for Mulberry Creek Plain. Additionally, temper particles are generally larger and make up a greater percentage of the paste than what is described for Mulberry Creek Plain. However, in other respects the Hurricane Branch Limestone Tempered Plain sherds resemble Haag's published description.

Although attributes of paste and temper described for Hamilton Plain (Lewis and Kneberg 1946:103) more closely resemble paste and temper attributes of Limestone Tempered Plain ceramics in this assemblage, surface treatment described for Hamilton Plain does not resemble surface treatment of Limestone Tempered Plain ceramics from Site 40JK27.

Mulberry Creek Plain is found throughout the southeast: in south-central Tennessee during the Middle Woodland, it is the most frequently occurring ceramic type in both the McFarland Phase in the Upper Elk Valley, (Bacon and Merryman 1973:6-8) and in the Owl Hollow Phase of the Upper Duck Valley (Faulkner and McCollough 1974:335-336). In the ceramic assemblages of Late Owl Hollow phase (A.D. 500-600) sites, however, Mulberry Creek Plain appears to decrease in frequency (Cobb and Faulkner 1978:23). In Kneberg's (1961) discussion of limestone tempered pottery complexes, she subsumes Hamilton Plain within Mulberry Creek Plain. Hamilton Plain is an important pottery type in the eastern Tennessee Late Woodland Hamilton Focus, and is the predominant ceramic type at two Middle Woodland Candy Creek Focus sites where stamping is strong (Kneberg 1961:7).

REFERENCES: Haag 1939:10; Lewis and Kneberg 1946:103

LIMESTONE TEMPERED SIMPLE STAMPED
(<u>Bluff Creek Simple Stamped</u>)
24 rims, 397 body sherds
Figure VI-92 and VI-93
TYPE CATEGORY 801030

Temper and paste characteristics for this type are discussed under Limestone Tempered Plain. Parallel ridges and grooves which have been stamped into the exterior surface give these sherds their distinctive identity. Execution of the stamping varies, however. In most cases, no outstanding characteristics in stamping execution could be noted For many specimens, however, variations in execution could be noted: 1) flat, low relief stamping, sharply and clearly defined (Figure VI-92: #7487; #8421); 2) rounded, high relief stamping, also sharply and clearly defined (Figure VI-92: #9204); 3) irregular execution, where stamping is of variable depth and stamp outlines are unclear (Figure VI-92: #7238; #10477); 4) smoothed-over stamps, where some stamp outlines appear smeared (Figure VI-92: #7215). When stamping is flat, in low relief and clear, small areas where paddle overlap occurred can be identified (Figure VI-92: #6890). Stamping depth varies from shallow to quite deep, although it most often tends to be shallow. Width of individual stamped ridges is fairly consistent (2-3 mm) and ridges are generally evenly spaced. In a few cases, space between stamped ridges is very wide.

Interior surface treatment is usually smooth and plain-matte, although instances of well-smoothed, poorly smoothed and scraping which produces a striated surface also occurs on interior surfaces. Sherd thickness ranges from 3-12 mm, with an average sherd thickness of 7.5 mm. Evidence for the use of the coiling method of manufacture for these vessels was present on a few sherds.

Twenty-four simple stamped rims were identified from this collection (Figure VI-93). Rims for the most part are direct, slightly to moderately outflaring and in one instance, possibly slightly incurving. Some rims taper to the lip. Lips are rounded or flattened. Five lips are notched (Figure VI-93: #8016; #6402). Lip shape is flat when notching occurs. Notching is generally shallow, but ranges from deep to fairly shallow. Notches vary in width (2-3 mm) and the frequency of their occurrence along the lip also varies. Simple stamping is always parallel to the lip, extending to the lip (Figure VI-92: #8016, #6402, #10477).

One whole vessel which was partially simple stamped was recovered from Feature 16, in Area 2. Although the vessel could not be reconstructed due to poor sherd condition, some characteristics of this vessel deserve mention. Thirty-two sherds from this vessel were simple stamped, 37 were plain and the 94 remaining sherds could not be assigned to a

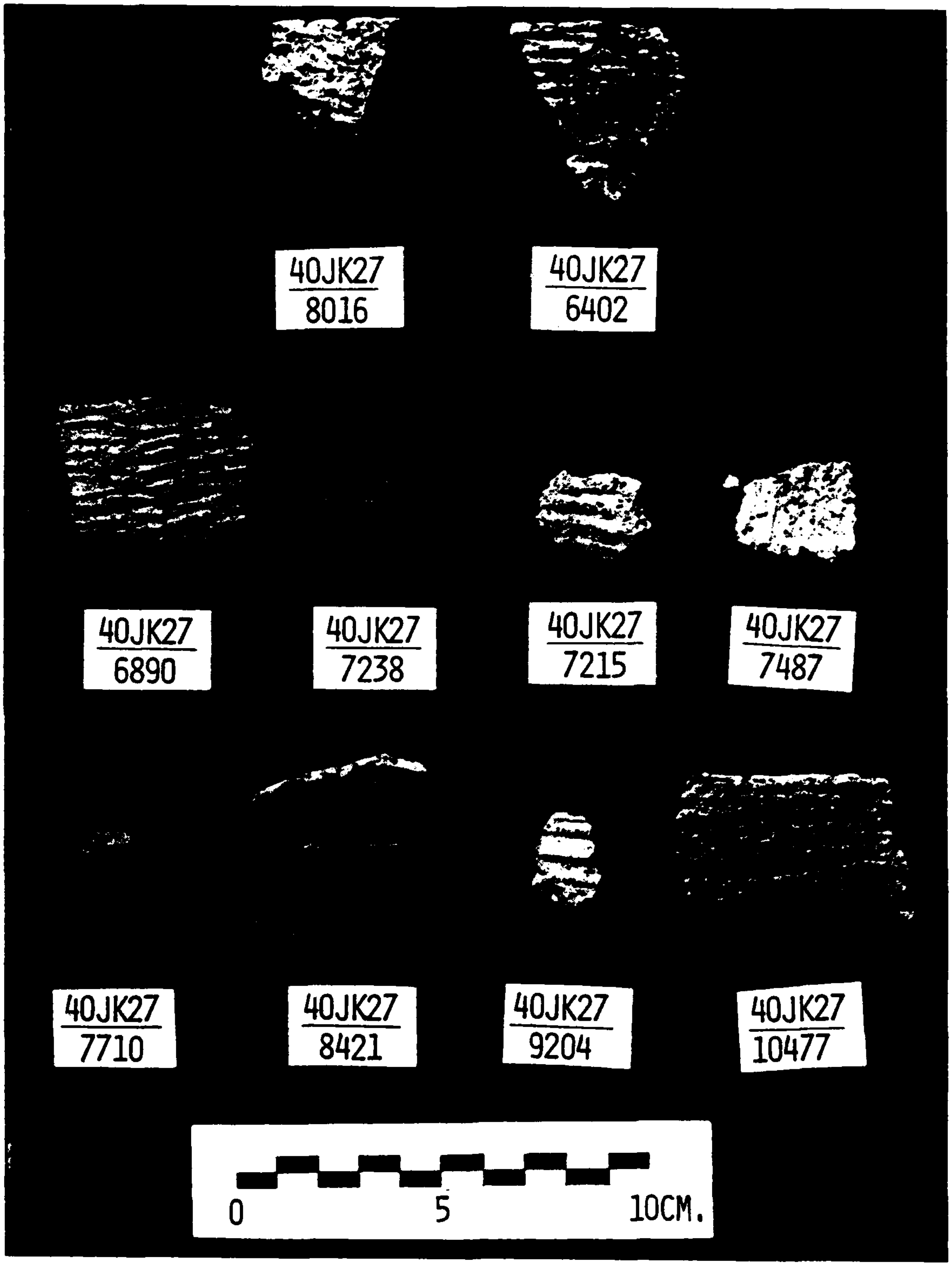


Figure VI-92. Limestone tempered simple stamped (#801030). (Note: #8016, #6402 and #10477 are rims).

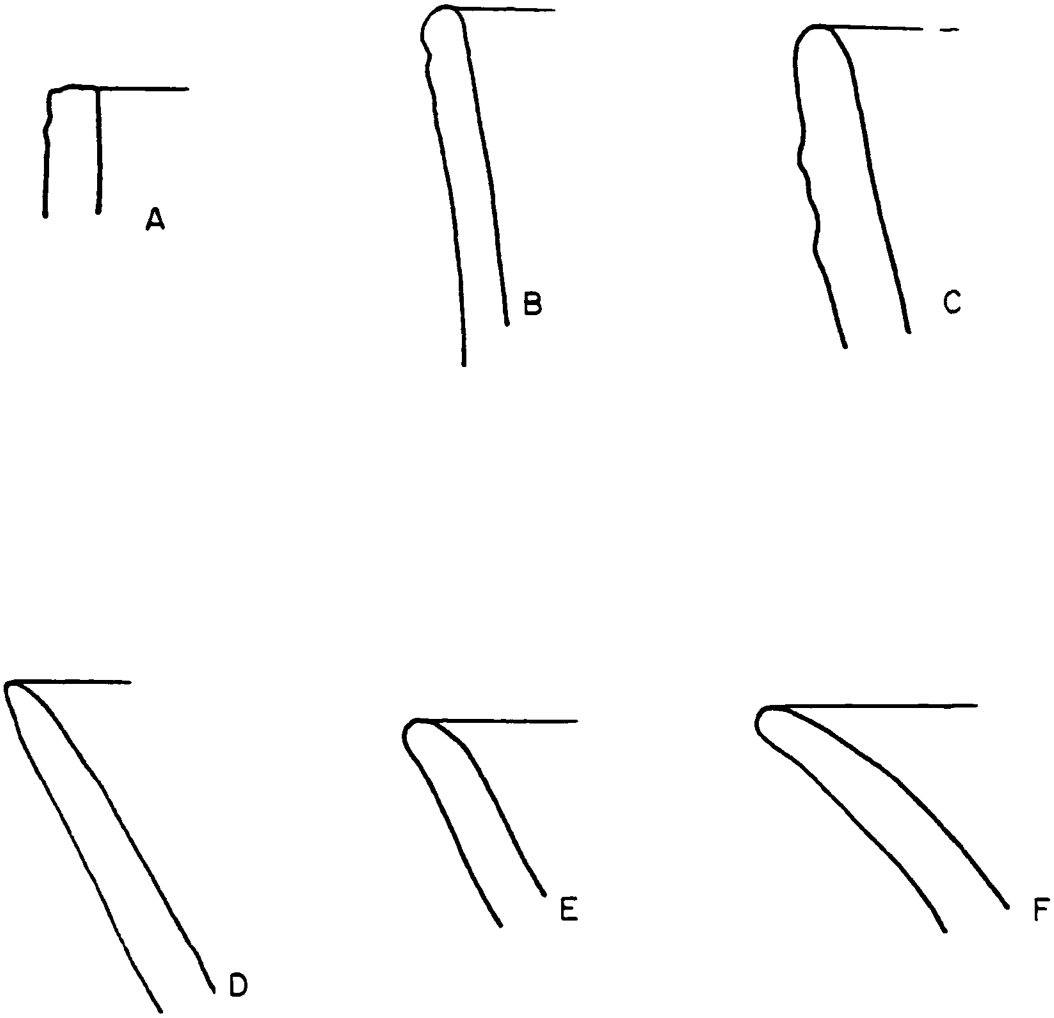


Figure VI-93. Limestone tempered simple stamped rims. A. #6274, B. #6402, C. #10477, D. #8326, E. #8016, and F. #7555.

ceramic type due to their small size. An examination of the 69 identifiable sherds indicates that the four rim sherds from this vessel are simple stamped (Figure VI-92: #10477). As with other simple stamped rims in the assemblage, stamping is oriented parallel to the lip and extends to the lip, which is slightly rounded. The rim curves outward slightly and tapers to the lip (Figure VI-93: #10477). Stamping was poorly executed and not clearly impressed on the exterior vessel surface. The fact that both simple stamped and plain sherds make up this vessel and the fact that only simple stamped rims were recovered suggests that the vessel was simple stamped on its upper portions only. However, an examination of sherd shape and thickness cannot support this suggestion and thus it must remain tentative.

Sherds assigned to this type generally resemble the published type description for Bluff Creek Simple Stamped (Haag 1939:12). In south-central Tennessee, Cobb (1977) has noted that stamping, and simple stamping in particular, appears more frequently during the Early Owl Hollow phase (A.D. 200-400). In this phase, it is the second most frequently occurring surface treatment, after plain surfaced limestone tempered ceramics (Cobb and Faulkner 1978:129).

In eastern Tennessee, the Candy Creek limestone tempered pottery complex owes much of its distinctiveness to the presence of stamped types: Bluff Creek Simple Stamped, Wright Check Stamped and Pickwick Complicated Stamped (Kneberg 1961:8). Although a carry-over of some stamped pottery into the Hamilton complex is indicated, stamped pottery as a whole is significantly associated only with the Candy Creek complex in eastern Tennessee (Kneberg 1961:9). Stamped types generally postdate cordmarked and fabric-impressed types in this area (Chapman and Keel 1979:159).

REFERENCES: Haag 1939:12

LIMESTONE TEMPERED CHECK STAMPED
(Wright Check Stamped)
4 rims, 54 body sherds
Figure VI-94 and VI-95
TYPE CATEGORY 801050

Temper and paste characteristics for this type are similar to those described for Limestone Tempered Plain, except that no chert inclusions were noted in the paste. Surface treatment for this type consists of stamped rectangular to square (some diamond) shaped impressions on the exterior surface.

As with simple stamping, check stamping also exhibits some variety in execution. Impressions range from fairly faint to very clear, and very deep to fairly shallow.

Generally, the space between the impressions is moderately wide, although sometimes the space is narrow. Size of the impressions (or "checks") is variable, ranging from 3-5 mm on the short side to 3.5-7 mm on the long side.

Interior surface treatment is usually smooth, and plain-matte, although there are a few instances where the interior is well-smoothed, or where scraping has produced a striated surface. Sherd thickness ranges from 6-11 mm, with an average thickness of 7.8 mm. There is evidence from some sherds that the method of vessel manufacture was coiling. Vessel form could not be determined from this sample.

Check stamped rims (Figure VI-95) are either direct, or slightly outflared. One rim tapers to the lip. Lips are generally flat or rounded. One rim has diamond-shaped check stamping which begins directly below the lip. The other rims have an unstamped area or "band" which extends 6-7 mm below the lip. Stamping begins here, and is either diamond-shaped, running diagonal to the lip, or rectangular, running parallel to the lip.

Sherds assigned to this type generally resemble the published type description for Wright Check Stamped (Haag 1939:13). Wright Check Stamped is a ceramic marker for the Middle Woodland Period in northern Alabama and south-central Tennessee and is the majority stamped type on McFarland phase sites in the Upper Elk and Upper Duck Valleys in south-central Tennessee (Faulkner and McCollough 1974:30). Wright Check Stamped ceramics are the most frequently occurring stamped ceramics found at Candy Creek complex sites, and continue to be produced in early Hamilton complex sites in eastern Tennessee (Kneberg 1961:9).

REFERENCES: Haag 1939:13

LIMESTONE TEMPERED COMPLICATED STAMPED
(Pickwick Complicated Stamped)
7 body sherds
Figure VI-94
TYPE CATEGORY 8C1040

Temper and paste characteristics for this type are also similar to those discussed for Limestone Tempered Plain, except that no sand, quartz or chert inclusions are found in the paste of these sherds. Stamping is applied to the exterior surface and is usually fairly deep and clear. No overall designs could be identified due to the size of the sherds, but stamping appears to consist of parallel lines executed in curvilinear designs. One sherd may have a rectilinear design, but this is difficult to determine.

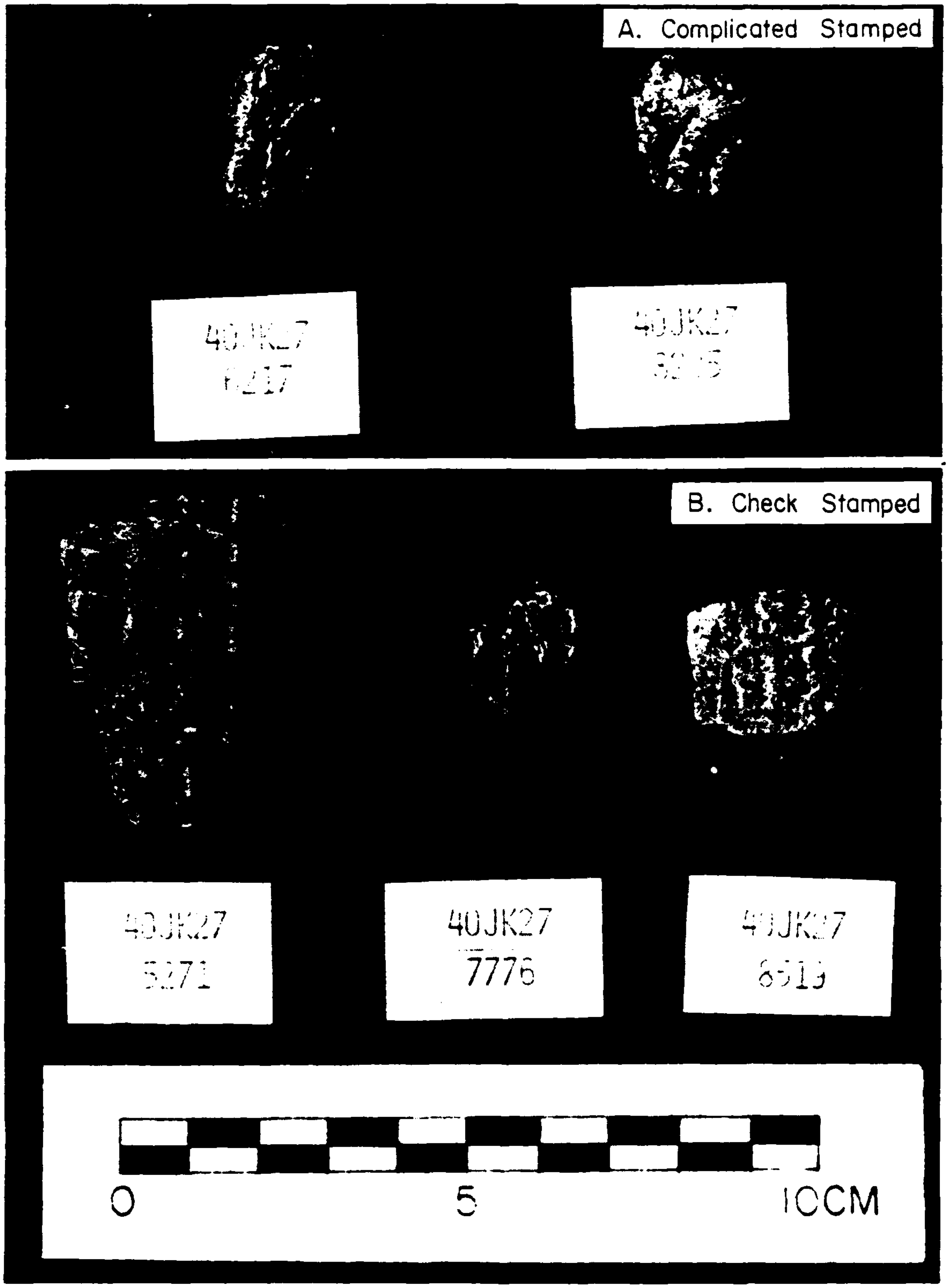


Figure VI-94. A. Limestone tempered complicated stamped (801040), and B. Limestone tempered check stamped (801050).

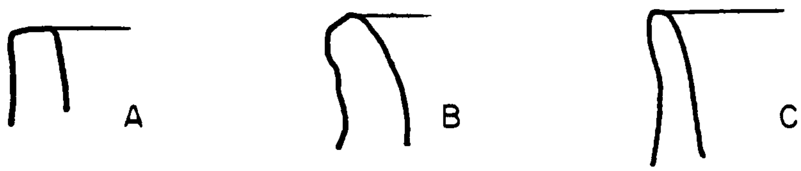


Figure VI-95. Limestone tempered check stamped rims. A. #6718, B. #6822, C. #7443.

Interior surfaces are smooth and plain-matte. Sherd thickness ranges from 6-9 mm with an average of 6.4 mm. No vessel forms could be discerned due to small sherd size and lack of any rim fragments. Method of manufacture could not be identified for this type.

Sherds assigned to this type generally resemble the published type description for Pickwick Complicated Stamped (Haag 1939:14). Pickwick Complicated Stamped occurs together with Wright Check Stamped, Bluff Creek Simple Stamped and Hamilton Plain at Peter Cave in south-central Tennessee (Hartney 1962). Dates of A.D. 264, A.D. 400 and A.D. 610, have been recorded at that site (Faulkner 1967:20). Complicated stamping occurs more frequently during Early Owl Hollow phase (A.D. 200-400) in south-central Tennessee and decreases in frequency during the Middle Owl Hollow phase (A.D. 400 - A.D. 600) (Cobb and Faulkner 1978:49). In eastern Tennessee, Pickwick Complicated Stamped occurs as a minority stamped type in Candy Creek focus sites (Kneberg 1961:8). Based on her research, Kneberg (1961:9) believes that simple and check stamped types were manufactured earlier than complicated stamped types.

REFERENCES: Haag 1939:14

LIMESTONE TEMPERED CORDMARKED
(Candy Creek Cordmarked, Hamilton Cordmarked)
1 rim, 72 body sherds
Figure VI-96 and VI-97
TYPE CATEGORY 801020

Temper and paste characteristics for this type are similar to those described for Limestone Tempered Plain, although no quartz or chert inclusions were found in the paste for this type. Exterior surface treatment is characterized by cord impressions, and there are a variety of different cord sizes and applications within this type. Most sherds are impressed with narrow (1-1.5 mm), closely wrapped, not deeply impressed, cords (Figure VI-96: #6248; #7438; #7741; #7520). A few sherds bear the impression of widely spaced, deeply impressed wide (3-4 mm) cordage (Figure VI-96: #6214; #7400). In a few cases, cordmarks appear smeared, possibly indicating attempts to smooth away the cordmarking. Cordage twist-type could not be identified when clay impressions of the markings were made. Interior surfaces are generally smooth and plain-matte. Sherd thickness ranges from 4-10 mm with an average of 6.6 mm. Vessel form could not be determined for this type.

One cordmarked rim sherd was recovered which showed evidence for the use of coiling in pot manufacture. Narrow (1 mm), shallow cordmarking on the exterior surface runs

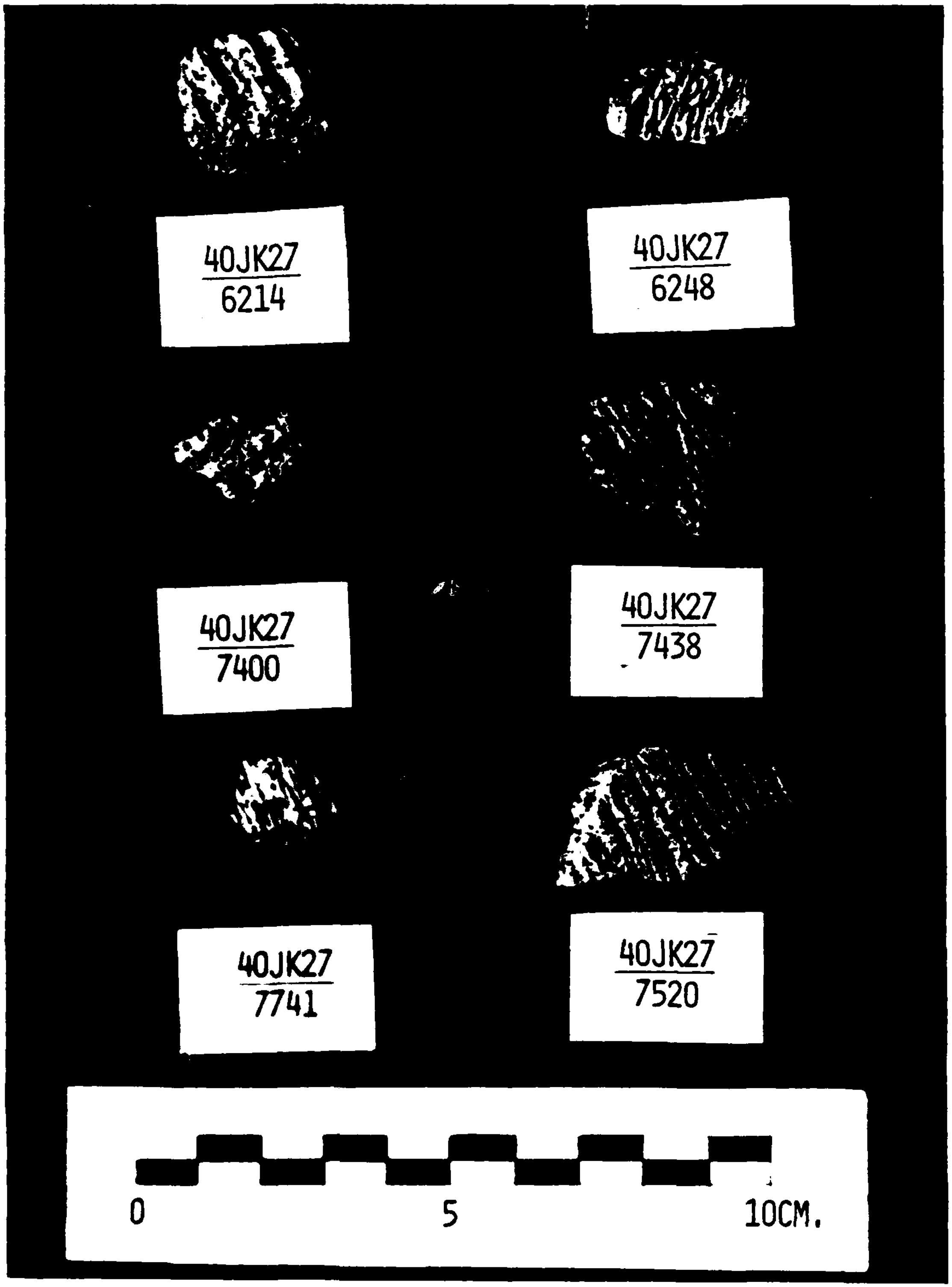


Figure VI-96. Limestone tempered cordmarked (801020).

perpendicular to, and extends to the lip. The rim is barely outflaring and tapers slightly to the lip. The lip is flat (Figure VI-97).

Figure VI-97. Outline of Limestone Tempered Cordmarked Rim (7556).

Most of the cordmarked ceramics from the Hurricane Branch Site appear to resemble Candy Creek Cordmarked. The majority are impressed with small, thin cordage. It is possible that those which appear to be smoothed over are related to Hamilton Cordmarked. Cordmarking is one of the major surface treatments in eastern Tennessee (Kneberg 1961:7) in the Candy Creek focus and the later Hamilton focus. In south-central Tennessee, cordmarking is a minority type in the McFarland and Owl Hollow phases (Cobb and Faulkner 1978:27; 129). However, at the Yearwood Site in south-central Tennessee where occupation is contemporary with the early McFarland Phase, a marked preference for cordmarked over check stamped limestone tempered ceramics has been noted (Butler 1979:156).

REFERENCES: Lewis and Kneberg 1946:102-103

LIMESTONE TEMPERED INCISED
(Sauty Incised-like)
1 rim, 9 body sherds
Figure VI-98 and VI-99
TYPE CATEGORY 801080

Temper and paste characteristics for this type are similar to those described for Limestone Tempered Plain, except that no paste inclusions were noted for this type. However, one or two incised parallel lines are added to the smooth and plain-matte exterior surface of these sherds. Incising rather than engraving is suggested since the execution of the lines indicates that they were made by a sharp instrument pressed into the clay at the leather-hard stage before the vessel was fired. Interior surfaces are also smooth and plain-matte. Sherd thickness ranges from 5-8 mm with an average of 6.5 mm. The single rim included in this type has two parallel lines incised diagonally to, and extending to, the lip. The rim is direct; the lip flat (see Figure VI-99: #5271). Neither method of manufacture

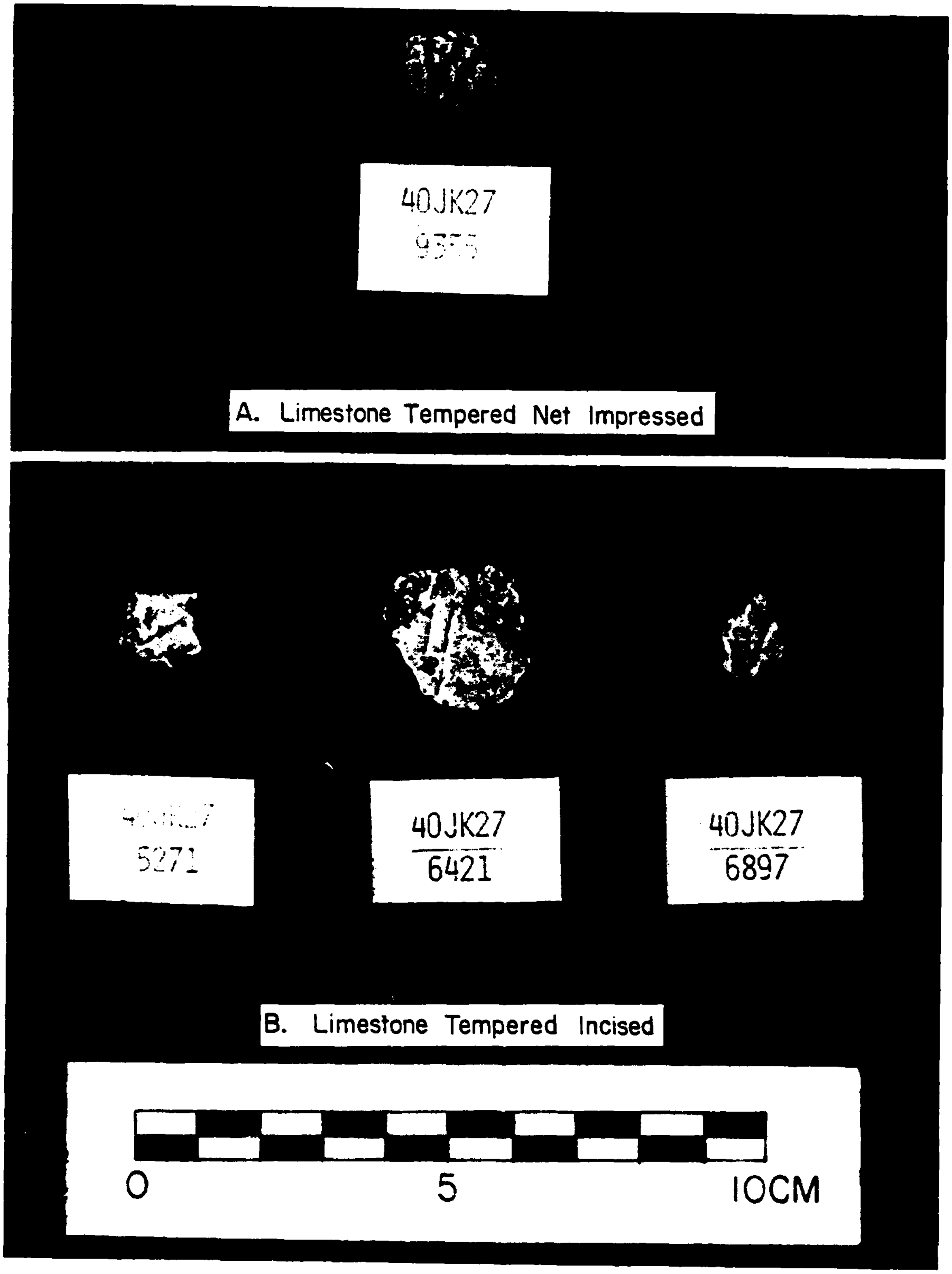


Figure VI-98. A. Limestone tempered net impressed, and B. Limestone tempered incised. (Note: #5271 is a rim.)

nor vessel form could be identified for this type.

Figure VI-99. Limestone Tempered Incised Rim (5271).

Although the incised sherds in this assemblage are limestone tempered, (and thus possibly related to Sauty Incised) location of the incising could be determined for only one sherd. Specimens were so small that not enough of the decoration remained, and thus motifs could not be identified. The type name is thus assigned with reservation. Sauty Incised is a minority type associated with Wright Check Stamped and Pickwick Complicated Stamped in northern Alabama (Hofman 1980:192). Faulkner and Graham (1966:49) date this type to the Middle Woodland Period in eastern Tennessee. Haag (1939:10) mentions that incising sometimes occurs on the rims of some Mulberry Creek Plain vessels, but the design which he described does not resemble the incised design noted on the rim included in this type.

REFERENCES: Heimlich 1952:19

LIMESTONE TEMPERED NET IMPRESSED
1 body sherd
Figure VI-98
TYPE CATEGORY 8C1060

The surface treatment of this single sherd was different from the other surface treatments identified in the collection. Although it resembles check stamping in that diamond-shaped impressions are the basic design formed by pairs of ridges, a tiny raised square is located wherever two ridges cross.

In other respects, this sherd is similar to the other limestone tempered types already described. It is 7 mm thick and has no inclusions in the paste. The interior surface is plain-matte with a striated surface produced by scraping. Neither vessel form nor method of manufacture could be identified for this sherd.

No attempt was made to assign a type name to this sherd, since its identification as net-impressed is considered tentative. However, one knot-roughened and net-impressed sherd was recovered from the Raus Site in south-central Tennessee (Cobb and Faulkner 1978:49), although it was tempered with limestone and chert. Cobb and Faulkner (1978:49) have assigned this type to the Late Owl Hollow phase.

REFERENCES: Cobb and Faulkner 1978:49

LIMESTONE TEMPERED, UNIDENTIFIED SURFACE
2 rims, 40 body sherds
Not Illustrated
TYPE CATEGORY 801001

Not all sherds could be confidently placed into the previously described types. Although these sherds do not have smooth and plain-matte exterior surfaces due to erosion or sherd size, etc., surface treatment could not be determined. It is quite probable that these sherds represent simple stamped, check stamped or cordmarked types, but this cannot be proven conclusively.

Temper and paste characteristics are similar to those identified for Limestone Tempered Plain, except no chert or quartz inclusions were found in the paste. The interior surface treatment and average thickness of the body sherds falls within what can be expected for simple stamped, check stamped or cordmarked types. Rims are rounded or flat. Because of their limestone temper, these sherds can be identified as Woodland, probably Middle Woodland, ceramics.

LIMESTONE TEMPERED RESIDUAL
320 sherds
Not Illustrated
TYPE CATEGORY 801000

Due to the poor condition of the sherd and sherd surface, the 320 fragments placed in this category could only be noted as limestone tempered. Because of their limestone temper, however, these sherds can be generally characterized as Woodland ceramics.

LIMESTONE TEMPERED WITH MICACEOUS PASTE PLAIN
(Keys Plain, new type)
1 rim, 20 body sherds
Figure VI-100 and VI-101
TYPE CATEGORY 801111

Although limestone tempered, a new type name Keys Plain was given to these sherds due to the different paste and paste inclusions they exhibited. The limestone tempering material has been leached out, leaving medium-sized angular holes in the paste. Inclusions of small mica particles in a finely textured paste serve as distinguishing characteristics of Keys Plain.

Exterior surface treatment is smooth and plain-matte, ranging in color from grey (10YR5/1) to pale brown

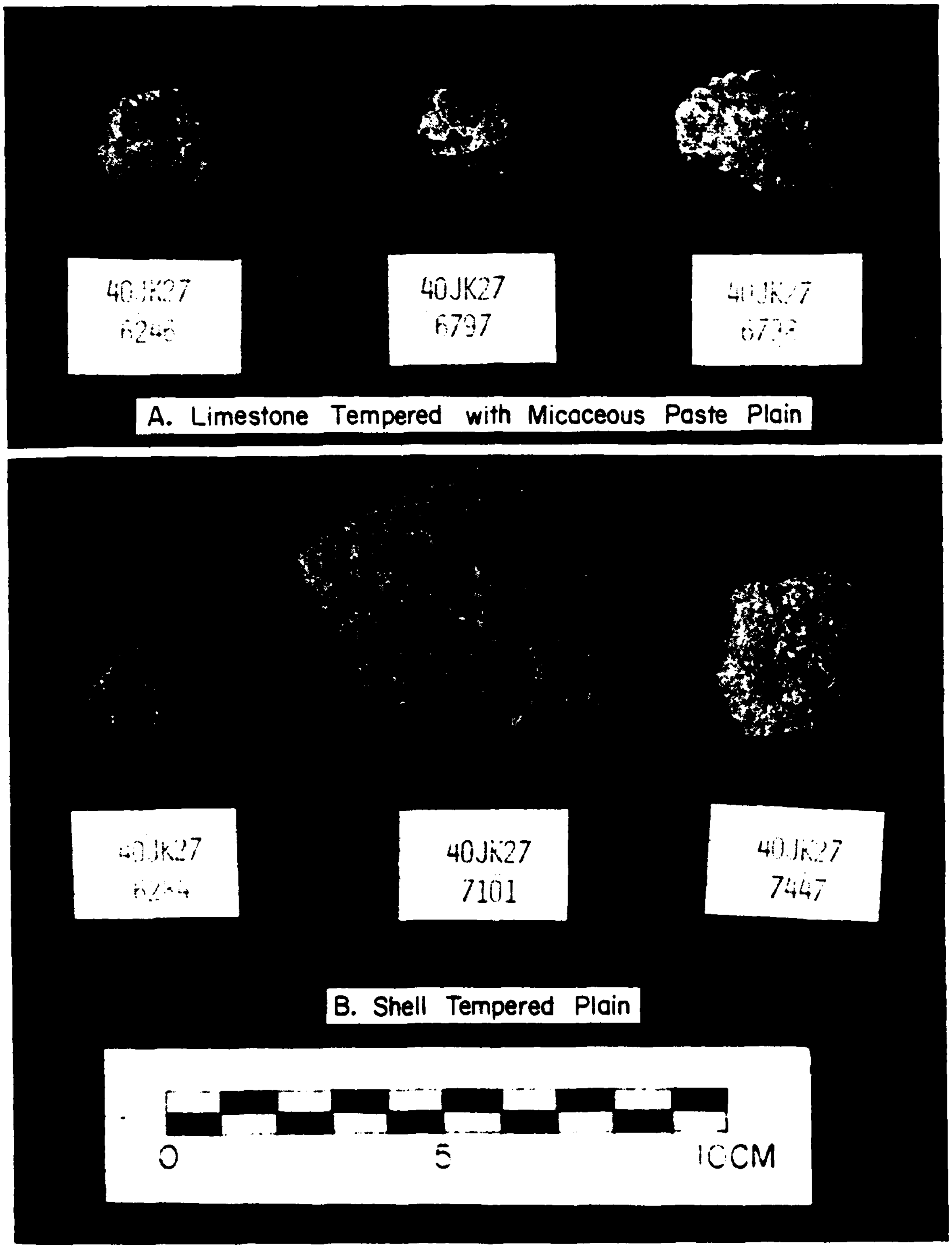


Figure VI-100. A. Limestone tempered with micaceous paste plain (801111), and B. Shell tempered plain (803010).

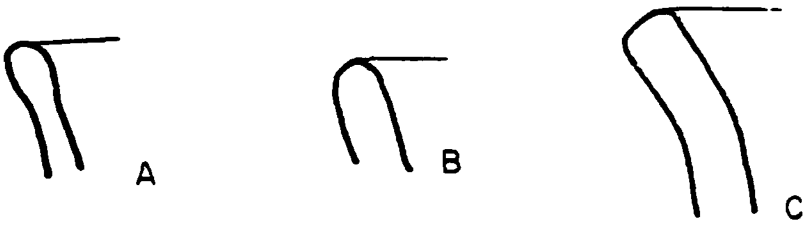


Figure VI-101. A. Limestone tempered with micaceous paste (#2435), B. Shell tempered (#6813), and C. Shell tempered (#7428).

(10YR6/3). Interior surfaces often bear smoothing marks, but are otherwise similar to the exteriors. Interior surface color is dark grey (10YR4/1). This grey color is also a distinguishing characteristic of Keys Plain.

Sherd thickness ranges from 4-7 mm and averages 5.3 mm. The thinness of the sherds serves to distinguish Keys Plain from other limestone tempered types. Neither method of manufacture nor vessel form could be identified for this type.

The single rim is moderately outflaring and the lip is rounded (Figure VI-101: #2435). The exterior surface is smooth and plain-matte and has smoothing marks. A thickened area is located in the interior, extending to 6 mm below the lip. This thickened area has several fairly deep slashes or grooves oriented diagonally to the lip.

It is possible that sherds included in this type may all be from the same vessel, due to their high degree of similarity in paste and temper attributes and their low frequency in the total ceramic assemblage. An examination of the location of these sherds indicates that the majority are found in Area 2. However, they are not found in any appreciable concentration in this area. Thus, there is no good evidence to support the suggestion that the sherds from this type belong to the same vessel. Their association at the site with other limestone tempered types indicates that Keys Plain can be tentatively assigned to the Middle Woodland Period.

LIMESTONE TEMPERED WITH MICACEOUS PASTE, RESIDUAL
1 sherd
Not Illustrated
TYPE CATEGORY 801100

Due to the poor condition of the sherd and sherd surface, this sherd could only be noted as limestone tempered with micaceous paste.

SHELL TEMPERED PLAIN
(Mississippi Plain-like: Neeley's Ferry Plain-like)
6 rims, 101 body sherds
Figure VI-100 and VI-101
TYPE CATEGORY 803010

Small crushed particles of shell are the primary temper found in these sherds. These particles have been leached out, however, and leave small, thin platy holes in the paste. Amounts of temper in the paste vary from moderate to dense. Generally the shell particles are laminated, and lie parallel to the sherd surface. However, in some cases the shell particles are oriented in many different directions. Shell particles range in size from about 1-3 mm. The paste is usually very fine, soft and friable.

A variety of additional particles are present in the paste. However, it could not be conclusively determined whether these particles were secondary tempering materials or inclusions, due to the generally small sherd size and the weathered nature of the sample. Therefore, these particles will be considered as inclusions. Small sand grains, small angular particles of crushed rock, medium-sized rounded red clay-like particles (probably hematite) and rarely partially leached limestone particles are included in the paste.

Sherd thickness ranges in size from 3-9 mm, with an average of 5.7 mm. The exterior surface is plain-matte, but exhibits an eroded, pockmarked character such that original surface treatment is difficult to determine. The same is true for the interior surfaces. Exterior surface color ranges from yellowish-red (5YR5/6) to reddish-grey (5YR5/2). Interior surface color ranges from reddish-grey (5YR5/2) to reddish-brown (5YR4/4). Rims are direct, barely outflaring, or moderately outflaring and do not taper to the lip (Figure VI-101: #6813; #7428). Lips are round or flat. Neither vessel form nor method of manufacture could be ascertained for this type.

Phillips (1970:131) has cautioned against the use of the type names Mississippi Plain or Neeley's Ferry Plain due to their status as "super types": they cover very broad geographical areas and long time spans. Because of this, and because the use of these particular type names indirectly suggests an affiliation with ceramics from the Mississippi River Valley, these names are assigned only tentatively. They are mentioned, however, in order to underscore the identity of the shell tempered ceramics from Site 40JK27 as coarse, shell tempered plain surfaced sherds, in contrast to shell tempered ceramics such as Bell Plain, which appear to be better made, and have finely crushed shell temper. (Phillips et al.1951:122). In most respects, the shell tempered sherds from Site 40JK27 resemble the published type descriptions for Mississippi Plain and Neeley's Ferry Plain except that 1) the color of the sherds in this collection tends to be more reddish- and reddish-orange-colored than grey, and 2) the surface finish of the sherds in this collection is pockmarked and eroded, and surface smoothing cannot be discussed.

In south-central Tennessee, shell tempered ceramics have been found associated with Woodland ceramics in a single pit on a habitation site assigned to the Late Woodland Mason culture (Faulkner 1968:43), dated A.D 770 +/- 85 and A.D. 890 +/- 90. If these dates are correct, this could be a very early occurrence of Mississippian ceramics in the

Middle South (Faulkner 1972:42).

In eastern Tennessee, shell tempered ceramics occur during the Hiwassee Island and Dallas phases. However, at the Martin Farm Site in the Little Tennessee Valley, there is evidence of an emergent Mississippian culture which preceeds the Hiwassee Island Phase (Faulkner 1972:43). This emergent Mississippian phase is dated at about A.D. 900, and has limestone tempered cordmarked and plain ceramics associated with shell tempered plain jars (Faulkner 1972:44); the shell tempered plain ceramics from Site 40JK27 may resemble the shell tempered plain ceramics from the Martin Farm Site. The shell tempered sherds from Site 40JK27 do not resemble shell tempered ceramics described for either the Hiwassee Island or Dallas phases (Lewis and Kneberg 1946:89). Because of this lack of resemblance, and also due to the inclusion of limestone in some of the shell tempered specimens from the site, the author would like to suggest that these sherds may indicate a very early Mississippian occupation at the site.

REFERENCES: Phillips 1970:130-135; Phillips et al. 1951:105-110.

SHELL TEMPERED RESIDUAL
89 body sherds
Not Illustrated
TYPE CATEGORY 803000

As with the limestone tempered ceramics, a number of shell tempered sherds could be analyzed only with respect to temper. Eighty-nine sherds were designated shell tempered residual. Because of their shell temper, they can be identified as Mississippian Period ceramics.

QUARTZ TEMPERED PLAIN
4 body sherds
Not Illustrated
TYPE CATEGORY 805011

Sherds of this type are tempered with medium to large angular pieces of crushed rock (quartz), which make up about 25-50% of the paste. The paste is generally fine textured and compact.

Sherd thickness ranges from 3-8 mm and averages 6 mm. Both exterior and interior surfaces are plain-matte, but the quartz tempering gives the sherd surfaces a rough feel. Exterior surface color ranges from dark brown (7.5YR4/2) to dark grey (10YR4/1). Interior surface color ranges from dark reddish-brown (5YR3/2) to dark grey (5YR4/1). No vessel forms can be identified due to small sherd size and the lack of rim sherds. Similarly, the method of manufacture cannot be discerned for these sherds.

Quartz tempered sherds in eastern Tennessee are generally classified in the Watts Bar series, which predates limestone tempered ceramic types in that area (Chapman and Keel 1979:159). However, Watts Bar ceramics are generally cordmarked and fabric impressed (Lewis and Kneberg 1957:7). The low frequency and small size of the sherds included in this type precludes any discussion of temporal placement or ceramic type assignment.

QUARTZ TEMPERED RESIDUAL
1 body sherd
Not Illustrated
TYPE CATEGORY 805000

One sherd containing quartz temper could be analyzed only with respect to temper. No temporal placement or ceramic type name assignment could be made for this sherd.

SAND TEMPERED PLAIN
1 rim, 1 body sherd
Not Illustrated
TYPE CATEGORY 806011

Small to medium-sized well-rounded quartz sand is the tempering material for these sherds. The paste is densely tempered with the sand.

Sherd thickness ranges from 6-8 mm and averages 6.6 mm. Both exterior and interior surfaces are plain-matte, but the sand tempering gives the sherd surfaces a rough feel. Exterior surface color ranges from yellowish-red (5YR4/8) to reddish-brown (5YR4/4). Interior surface color is very dark grey (10YR3/1).

Sherds assigned to this category are generally quite small, and thus no mention can be made of either vessel form or method of manufacture. The one rim sherd is too small to discern shape, but it does have a flat lip.

This sand tempered type could be related to either the ceramic traditions from the Applalachian summit area (Keel 1976; Dickens 1976) of western North Carolina or the sand tempered ceramic series from Northern Georgia (Wauchope 1966:52) or northwestern Alabama (Heimlich 1952:9-15). Small sherd size precludes a satisfactory choice between these traditions and makes any discussion of temporal or ceramic type name assignment impossible. However, sand tempered ceramics do occur rarely in south-central Tennessee, where they are considered as vessels which were possibly brought in (Faulkner and McCollough 1977:99). Sand tempered Connestee ceramics (the Middle Woodland series from the Applachian Summit area) cccur in eastern Tennessee as an important component of the ceramic assemblage at Ice House Bottom, but occur in much lower frequencies at other Candy Creek component sites (Chapman and Keel 1979:159).

SAND TEMPERED SIMPLE STAMPED
1 body sherd
Not Illustrated
TYPE CATEGORY 806030

The temper and paste characteristics for this sherd are similar to Sand Tempered Plain. However, on the exterior surface of this sherd, faint simple stamp impressions could be discerned, although they are too faint to describe in any detail.

The interior surface is plain-matte and the sherd thickness is 8 mm. Vessel form could not be discerned from examination of this single sherd. Method of manufacture was similarly impossible to define.

This sherd could be related to either Connestee Simple Stamped (Keel 1976:252), Deptford Simple Stamped (Wauchope 1966:47-48), or Benson Simple Stamped (Heimlich 1952:14), but it is too small for any conclusive assignment to be made.

SAND TEMPERED RESIDUAL
3 body sherds
Not Illustrated
TYPE CATEGORY 806000

Two sherds could be identified as sand tempered, but no other attributes could be discerned due to their small size and eroded surfaces. No temporal or ceramic type name assignment can be made for these sherds.

FIRED OR BURNT CLAY
1048 fragments
Not Illustrated
TYPE CATEGORY 810000

One thousand forty-eight pieces of fired or burnt clay were recovered from Site 40JK27. Specimens were defined as fired or burnt clay by their amorphous, rounded shape, their lack of any discernible tempering material, their generally bright orange to reddish-orange color and the ease with which the surface could be rubbed off. Fired or burnt clay particles are common elements included in feature fill, and are commonly related to activities such as hearth construction and use.

DAUB
62 fragments
Not Illustrated
TYPE CATEGORY 820000

Sixty-two fragments of daub were recovered from Site 40JK27. Daub was distinguished from fired or burnt clay if impressions of sticks or twigs could be discerned. Fragments were small, amorphous lumps of clay, generally bright orange to reddish-orange in color.

Ethnographic accounts of house construction techniques employed in the southeastern United States mention that daub, or moist clay was used to coat log and stick frame structures (Swanton 1979:387-389). When these structures burned, the daub was fired, giving it its distinctive color, and the impressions of the logs and sticks were made permanent.

MISCELLANEOUS
1 fragment
Figure VI-102

This artifact appears to be a lump of fired clay which has had holes poked into it with a sharp, round (5-9mm in diameter) instrument. However, an alternative explanation which could be entertained would characterize it as possibly the remains of a mud dauber wasp's nest. The artifact is greyish-brown and is 28 mm wide and 42 mm long. This author offers these two explanations for the identity of this artifact with the realization that conclusive identification of this artifact is not possible.

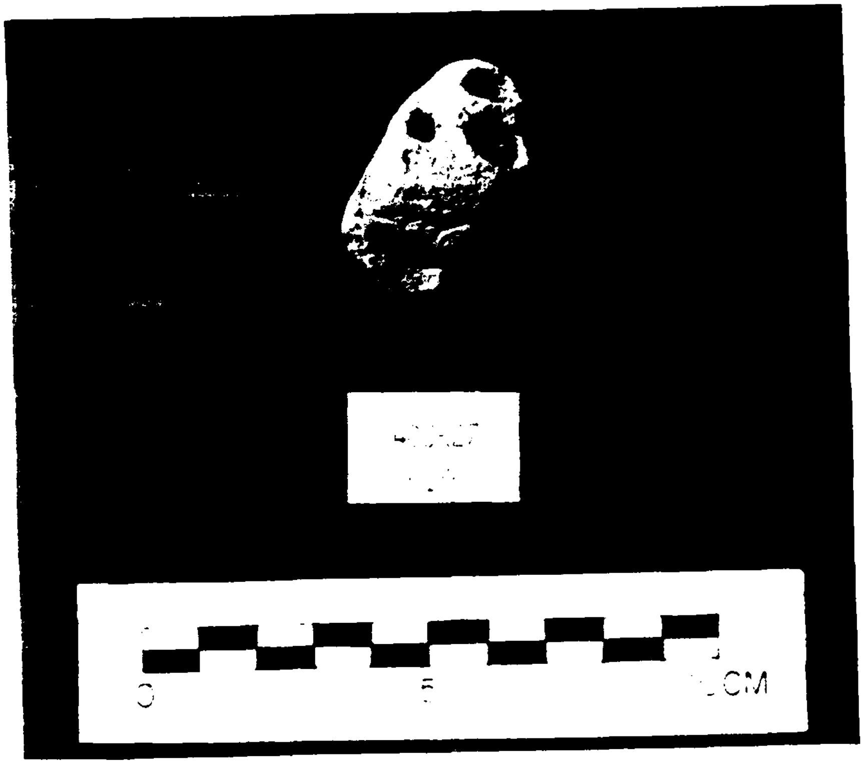


Figure VI-102. Miscellaneous.

Interpretations

Unfortunately, the scant and fragmental nature of this ceramic assemblage within regard to vessel form and the like did not permit the formation of functional categories within the assemblage. The ceramic data, in conjunction with other material classes will be discussed with regards to postulated site activities in later chapters. However, the following cultural historical interpretations can be made from an examination of the ceramics recovered from the site: 1) the phases of occupation at the Hurricane Branch Site, 2) the relative dates of these occupations and 3) the relationship of this ceramic assemblage to already defined archaeological complexes.

Jolley (1978:135) has pointed out that the Middle Cumberland Region, which includes the Outer Nashville Basin and the western Highland Rim, lacks a properly established ceramic typology. Since the Hurricane Branch Site is located in this region, the ceramic analyst must look further afield, at least to eastern and south-central Tennessee, in order to find comparable ceramic assemblages.

The overwhelming majority of sherds from the Hurricane Branch Site which were analyzed are limestone tempered

(91.6%; n=2,727). Limestone tempered ceramics indicate a general Middle Woodland cultural affiliation in south-central Tennessee, dating from 200 B.C. - A.D. 600 (Cobb and Faulkner 1978:23). Limestone tempered plain and simple stamped ceramics also indicate a Middle Woodland affiliation in eastern Tennessee (Schroedl 1978:43). Based on the fact that most of the ceramics from the site are limestone tempered, and that most are plain or simple stamped, it appears that the major component at the Hurricane Branch Site is Middle Woodland.

Other types of tempering materials included in the assemblage are shell (7.2%), limestone tempered with micaceous paste (.8%), quartz (.2%), and sand (.2%). The existence of shell tempered ceramics suggests that there is a minor Mississippian component at the site. An initial date of A.D. 900 has been offered for the first appearance of shell tempered pottery in eastern Tennessee (Faulkner 1972:43). Characteristics of the shell tempered ceramics from Site 40JK27 suggest that the Mississippian occupation at the site may have been quite early.

Quartz and sand tempered ceramics occur in such very small percentages that little can be said regarding their occurrence in the assemblage. The Watts Bar ceramic sequence of eastern Tennessee is quartzite tempered (Lewis and Kneberg 1957:7), but is not plain and is generally assigned an Early Woodland affiliation. Watts Bar ceramics, however, do occur with limestone plain and cordmarked types in eastern Tennessee (Calabrese 1976:85) which have been dated to the Early Woodland.

Sand tempered ceramics are found south and east of the Hurricane Branch Site, in northern Georgia (Wauchope 1966:52), northwestern Alabama (Heimlich 1952:9) and in the Appalachian summit area of western North Carolina (Keel 1976:254). Sand tempered ceramics are minor constituents in both eastern and south-central Tennessee Middle Woodland components (Chapman and Keel 1979:159; Faulkner and McCollough 1977:99), but may occur much later than the Middle Woodland as well.

Since the major occupation at the Hurricane Branch Site appears to be Middle Woodland, this particular component deserves closer examination in order to determine, if possible, its relationship to previously defined ceramic assemblages of this period. Plain and simple stamped surfaces make up nearly three quarters of the limestone tempered sherds (62.6% and 16.8% respectively; n=2,498). Cordmarked and check stamped surface treatments occur as minor types (2.9% and 2.3% respectively). Faulkner's (1978) description of Early Owl Hollow Phase (A.D. 200-400) ceramics from south-central Tennessee appears to resemble the Hurricane Branch assemblage most closely. Simple stamping appears more frequently in Early Owl Hollow Phase sites (Cobb and Faulkner 1978) than in Middle and Late Owl Hollow Phase sites. Early Owl Hollow Phase ceramic assemblages consist mostly of limestone tempered sherds and have a high percentage of plain ceramics (Cobb and Faulkner 1978:110). Check stamping, curvilinear complicated stamping and cordmarking are all cited as minor ceramic types in Early Owl Hollow Phase ceramic assemblages (Cobb and Faulkner 1978:129). Although the majority of rims in the Hurricane Branch assemblage are not notched, notching does occur in moderate amounts which is another attribute of Early Owl Hollow Phase ceramics noted by Cobb and Faulkner (1978:129).

Similarities also exist between the Hurricane Branch ceramic assemblage and Candy Creek complex ceramics of eastern Tennessee. Stamped pottery (simple, check and complicated) is significantly associated only with the Candy Creek complex (Kneberg 1961:9). Kneberg estimates a beginning date for this complex as 200 B.C. and an ending date of around A.D. 400-600 (1961:10). An important difference between the Candy Creek complex and the Hurricane Branch ceramic assemblage, however, is the larger percentage of cordmarked and fabric marked ceramic types in the Candy Creek complex.

Based on a comparison with Middle Woodland ceramic assemblages in south-central and eastern Tennessee, the Hurricane Branch Site ceramics appear to most closely resemble the early Owl Hollow Phase ceramics from south-central Tennessee, but they share some important similarities with the Candy Creek complex of eastern Tennessee. Possible dates of A.D. 200 - A.D. 400 for the Middle Woodland component at Site 40JK27, based on ceramic evidence alone, seems plausible.

Botanical Remains

by
Jack Rossen

Introduction

Organized efforts to identify and analyze archaeological plant remains began in 1930 at the University of Michigan's Museum of Anthropology. Melvin R. Gilmore and Volney H. Jones were primarily responsible for pioneering and stimulating interest in this area. Their early studies were dependent on unusual preservation conditions, such as materials from dry rockshelters (Jones 1936), or fossilized human feces (Gilmore 1931). With the development of water flotation techniques by Struever (1968), systematic recovery of carbonized plant materials from their soil matrix became possible. The documentation, analysis and interpretation of plant materials, collectively labeled paleo-ethnobotany, is now considered an integral aspect of archaeology. On many sites, these remains provide the crucial evidence for interpretation of site function and activities. Ford (1979) has listed six major problem orientations to which botanical assemblages contribute evidence:

1. utilization of plants
2. origin (or introduction) of agriculture
3. migrations
4. environmental reconstruction
5. human adaptations
6. prehistoric ideology

As will be demonstrated, several of Ford's categories in some way relate to the botanical assemblage presented here.

Some 6,498 specimens of carbonized plant material, recovered from 270 flotation samples, were analyzed for this report. All but 45 of these were recovered from Area 2, the Woodland component (Table VI-4). The sample includes the complete fill of all features and posts (except Features 7, 8, and 30) and level samples from all subplowzone units of the South Block, Area 2. This sample reveals an assemblage consisting primarily of nutshell, wood charcoal and carbonized seeds, along with trace amounts of nutmeat, cordage and the exotic cultigens, corn (*Zea mays*) and squash (*Cucurbita* sp.) The following discussion will include the analytical methodology, the quantities and uses of represented plant materials, and some implications for the chronology, habitat, seasonality and subsistence activities at the Hurricane Branch Site. Spatial distributions of these materials will not be discussed here, but will be considered collectively with other artifact categories in Chapter VII.

Methodology

A detailed discussion of excavation recovery techniques and sample selection procedures was presented in Chapter IV; thus, only a few relevant remarks concerning the specific analytical approach to the plant remains is necessary.

First, all flotation samples were processed in a flotation device described by Watson (1976). Once dried, an

Table VI-4. Total Flora Outside Area 2.

	(Features 14, 19, 23, 49, 50 and waterscreens) Frequency	Weight by Grams
hickory (*Carya* sp.)	30	.7
black walnut (*Juglans nigra*)	9	.1
Juglandaceae	2	.0
marshelder (*Iva annua*)	1	-
grape (*Vitis* sp.)	1	-
corn (*Zea mays*)	2	.0
TOTAL	45	.8

initial random sort of charcoal from roots and other noncarbonized contaminants was conducted to determine the nature of the recovered materials. This preliminary sort emphasized separation of larger charcoal fragments and carbonized seeds. These specimens were sorted by species, counted and weighed to the nearest tenth of a gram. Identifications from the preliminary sorting were checked by Nancy B. Asch at the Center for American Archaeology Archaeobotancal Laboratory. A sample of the remaining specimens, referred to as the second sort was sieved through 2 mm mesh prior to identification, counting, and weighing. Asch and Asch (1975; 1978) have demonstrated that pieces larger than 2 mm are representative of smaller specimens with the exceptions of acorn and cucurbita rind. Identification of specimens longer than 2 mm is also more reliable. All sievings which include all residue charcoal less than 2 mm in size were scanned for carbonized seeds. The result is a time efficient analytical technique with minimal data loss. Thus, the total sample presented here is the complete preliminary sort and a majority of the second sort, which collectively includes some specimens from all flotation samples. Despite the fact that a minority of the specimens larger than 2 mm from the flotation samples has not been analyzed, it is believed a representative sample of the variety and distribution of flora at the Hurricane Branch Site has been achieved. Only tabulations from Features 29, 39 and 40, which contained relatively large quantities of nutshell, are expected to change appreciably in the final analysis. The 100% data set analysis, to be completed as part of a masters thesis concerning the botanical structure of the Hurricane Branch Site, is expected to produce only minor adjustments and perhaps inflate the hickory nutshell percentages. The wood charcoal, much of it unidentifiable branches and twigs, was sorted and filed but not analyzed.

As mentioned above, it should be noted that almost all of the plant specimens were recovered from Soil Body B, the Woodland component. This soil body is a sandy and silty loam with a relatively high alkaline content, which coupled with good drainage at the site, enhanced the preservation of organic materials. Some 45 specimens were recovered from Soil Body C, the clayey Archaic deposits. The acidic nature and shrink-swell capacity of this soil body is not conducive to preservation (see Chapter IV).

Feral Plant Categories

Nutshell

Table VI-5 shows relative percentages of the 6,315 carbonized nutshell fragments. Juglandaceae denotes specimens such as septums which lack diagnostic characteristics and could be either hickory, black walnut, or butternut. The large majority of nutshell occurred in Features 29, 39 and 40, although small amounts of all major nut categories were found throughout Area 2. Hickory (Carya sp.) dominates in both count and weight, followed by black walnut (Juglans nigra), butternut (Juglans cinerea) and hazelnut (Corylus sp.). Acorn (Quercus sp.) is represented by only three shell fragments and one nutmeat specimen. This could be due to either its fragility and the difficulties of recovering it archaeologically, processing techniques which precluded or hampered its inclusion in archaeological deposits, or an indigenous preference for other nut resources at the site.

Carbonized Seeds

Sixty-one carbonized seeds were isolated, all but one associated with Area 2. Grape (Vitis sp.), goosefoot (Chenopodium sp.) and sumac (Rhus sp.) together make up 62.3% of these seeds (Table VI-6). Also represented in small quantities are several native annual plants known to have been gathered and possibly even cultivated at other localities. These include the previously mentioned Chenopodium sp., along with maygrass (Phalaris caroliniana), and marshelder (Iva annua). These plants have all been widely documented archaeologically throughout the Eastern Woodlands. Also recovered in trace amounts were Amaranthus sp., Galium sp., and Desmodium sp., and two seeds previously recognized archaeologically but never identified. One seed type was recognized by Asch and Asch (personal communication: 1981) in the Illinois River Valley and is referred to as "Type 10 unknown." The second type was recorded by Crites (personal communication: 1982) at sites in the Duck and Elk River valleys of Tennessee and classified "Type 5 unknown" (Figure VI-103).

The possible utilizations of the above plants recognized at the Hurricane Branch Site are considered below:

1. (Vitis sp.) grape, 17 distributed in 12 Area 2 samples. Grapes were utilized as a food and for dyes (Hudson 1976:285).

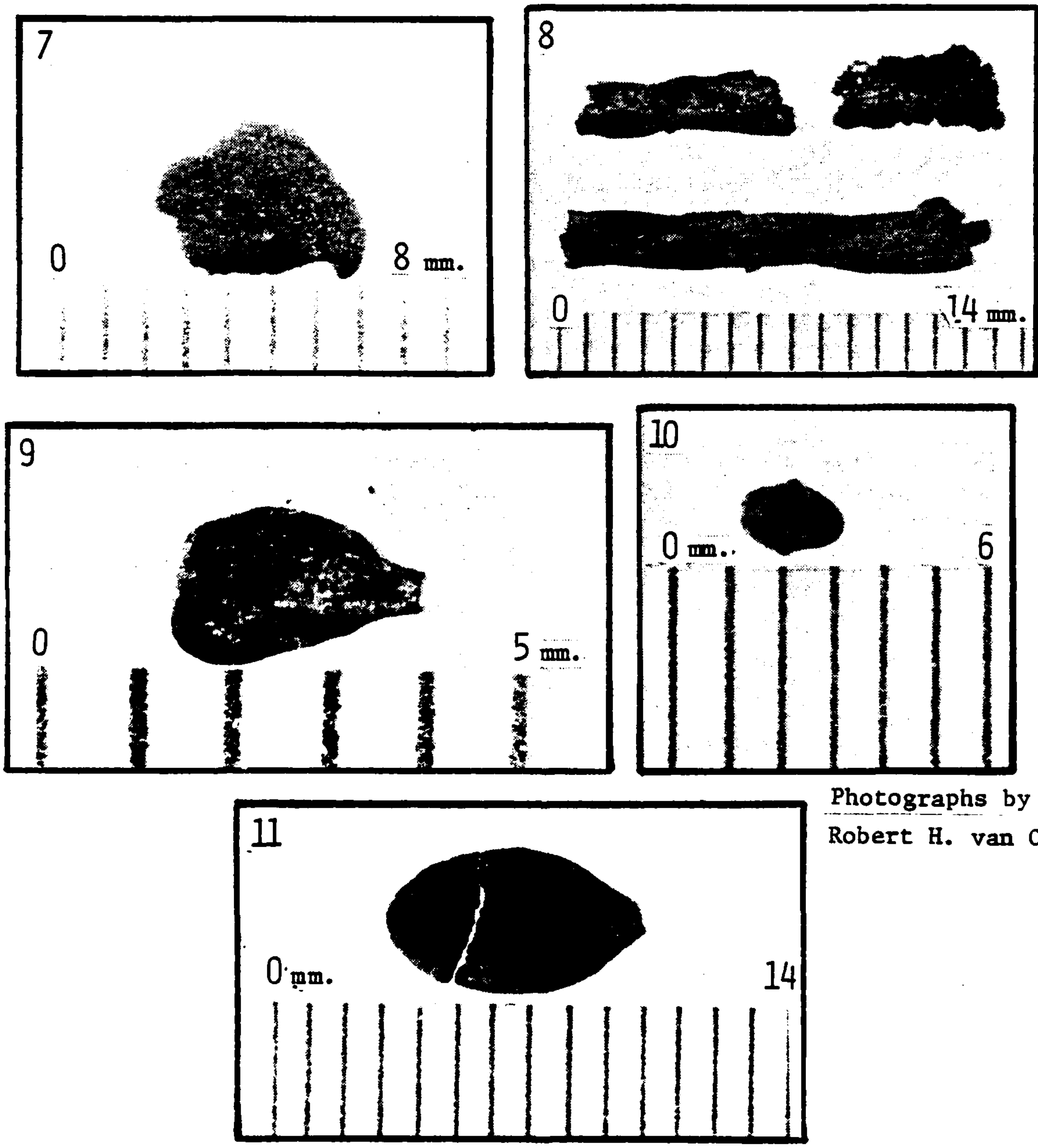
Table VI-5. Nutshell Data.

Species	Frequency	Percent by Frequency	Weight in Grams	Percent by Weight
Hickory (*Carya* sp.)	4910	77.8	188.5	77.5
Black Walnut (*Juglans nigra*)	484	7.7	34.5	14.2
Juglandaceae	733	11.6	11.4	4.7
Butternut (*Juglans cinerea*)	157	2.5	7.2	3.0
Hazelnut (*Corylus* sp.)	9	0.1	1.0	0.4
Other (*Quercus*, unknown, unidentified)	22	0.3	0.6	0.2
TOTALS	6315	100.0	243.2	100.0

Table VI-6. Carbonized Seeds.

Species	Frequency	Percentage of Total*
Grape (*Vitis* sp.)	18	29.5
Goosefoot (*Chenopodium* sp.)	11	18.0
Sumac (*Rhus* sp.)	9	14.8
Honey Locust (*Gleditsia triacanthos*)	2	3.3
Other (*Amaranthus* sp.) (*Desmodium* sp.) (*Galium* sp.) (*Iva annua*) (*Phalaris caroliniana*) (Type 5 unknown) (Type 10 unknown)	7	11.5
Unidentified	14	23.0
TOTALS	61	100.1

*percentages figured to nearest tenth of gram



Photographs by
Robert H. van Outer

Figure VI-103. 7. cucurbita sp. rind from Feature 40, Area 2. 8. dessicated cordage from level 4, Unit 126, Area 2. 9. Iva annua achene from Feature 49, Area 3. 10. type 5 unknown seed from level 4, Unit 128, Area 2. 11. type 10 unknown seed from Feature 10, Area 2.

2. (*Chenopodium* sp.) goosefoot, lamb's quarter. 11 distributed in six Area 2 samples.

Chenopodium sp. is a leafy green vegetable which is a relative of spinach. Gilmore (1931) and Jones (1936) originally mentioned *Chenopodium* sp. as a possible native American cultigen, based on collections from Kentucky and Missouri rockshelters. Their argument was rejected by Asch and Asch (1977), who after reexamination of the materials found only minor differences between the archaeological seeds and their modern counterparts. However, recent analysis of new materials by Wilson (1981) again favors classification of *Chenopodium* sp. as a native domesticate. *Chenopodium* is a particularly difficult plant to deal with in the archaeological record. Because any single plant can produce up to 100,000 naturally dispersing seeds (Angier 1978:191; Hudson 1976:287), aboriginal utilization is difficult to demonstrate. Estimating seasonality is also a problem, because the plant may be utilized for either its greens or seeds, and time of growth and ripening varies greatly between species. For example, *C. bushianum* grows in the fall, distinctly later in the year than other varieties (Asch and Asch 1978). Another complication is illustrated by the research of Asch and Asch (1978), who observed differences in seasonality and seed morphology among an individual species (*C. bushianum*) dependent on ground elevation above water and land drainage, because seeds must thoroughly dry out before germination will occur. Finally, geographic latitude affects seasonality. In Illinois, most species tend to be placed in a late summer/fall classification (Asch and Asch 1978); while in Texas *Chenopodium* sp. greens are available by late April and May (Crane 1982). While all plant utilization and seasonality discussions must account for the above factors, *Chenopodium* sp. has proven especially sensitive.

3. (*Rhus* sp.) sumac, 9 distributed in four Area 2 samples. Sumac is a shrub or small tree of the cashew family (Anarcardiacaceae). There are widespread ethnographic reports of the use of its berries in a Vitamin C-rich tea, although the berries are also eaten, and dried for winter use (Swanton 1979:606).

4. (*Amaranthus* sp.) amaranth, 1 specimen in Area 2. Amaranth is an erect annual, almost identical to *Chenopodium* sp. in appearance, habitat, and nutritional value (Angier 1978:33). It is not nearly as widely recognized archaeologically as *Chenopodium* sp. and its prehistoric utilization is firmly documented in only a few instances, such as in the human feces at Salts Cave, Kentucky (Yarnell 1969:42-7).

5. (*Phalaris caroliniana*) maygrass, 1 specimen in Area 2.

Cowan (1978) has considered in depth the role of maygrass in Eastern Woodland culture history. The question of its prehistoric cultivation remains unanswered. Although the plant has been recovered archaeologically outside its present natural range, the seeds have not changed morphologically. Phalaris caroliniana has also retained the trait of indeterminate inflorescence, meaning that its grains ripen and mature sequentially on any single plant, rendering it impossible to collect with all its grains mature and intact at any one time (Cowan 1978:267). This may have discouraged attempts at systematic cultivation.

6. (Iva annua) marshelder or sumpweed, 1 specimen in Area 3 (Figure VI-103). Asch and Asch (1978) have considered the economic potential of Iva annua and and have concluded that it was indeed a native American cultigen based on the following: (1) archaeologically recovered achenes more than twice the size of modern wild Iva annua and (2) its archaeological distribution outside its modern natural range. The oily seeds contain unusually high nutritional value in a wide range of vitamins and minerals.

7. (Gleditsia triacanthos) honey locust tree, 2 specimens distributed in two Area 2 samples.

The pulp contained in its pods, around an inedible seed, was widely utilized ethnographically throughout the southeastern United States. The pods were dried and ground up as a sweetener or made into a beverage (Hudson 1978:287, 309).

8. (Galium sp.) bedstraw or lady's bouquet, 1 specimen in Area 2.

This plant was used ethnographically as a diuretic medicine among the Ojibwa (Smith 1932:386), and a perfume among the Omaha and Ponca (Gilmore 1977). As Asch, Ford and Asch (1972) note, the seeds themselves are unpalatable though possibly edible, and readily stick to clothing, so their presence does not necessarily indicate utilization.

9. (Desmodium sp.) tick-trefoil, 1 specimen in Area 2.

Desmodium sp., a member of the bean family (Fabaceae), was also recognized archaeologically at the Koster Site in Illinois. However, the possibility of its utilization there was dismissed because its seed pods stick to clothing and animals in large numbers (Asch et al. 1972:18). Other sources describe the plant's ethnographic use as an antispasmodic and expectorant medicine (Angier 1978:281).

Miscellaneous

Cordage -- Three small specimens of dessicated, fine-fiber cordage were fortuitously recovered while water screening fill from Level 3 of Unit 128 (Area 2). The specimens measure 2.95, 1.4, and 1.1 cm in length, and .2 cm in diameter. The twist is too loose for secure typing. One specimen appears to be a portion of a knot. These specimens are too small for speculation on their exact use or production technique (Figure VI-103).

Fungus -- Feature 34 contained 185 fragments (1.1 gm) of unidentified carbonized remains. On observation, Yarnell feels that these are not nutshell and are possibly fungus (personnal communication: 1982). Whether this fungus was utilized or is incidental to the burned wood in the feature remains unknown.

Contemporary Setting

Some plants contained in the archaeological assemblage were also observed growing on the site during the May to June field season. After the field was plowed for surface collection, *Amaranthus* sp. and *Chenopodium* sp. were among the primary pioneers. Their modern seeds were also recovered in several flotation samples. Grape and staghorn sumac (*Rhus typhina*) grew along the site's western perimeter which immediately overlooks the river. Other useful plants observed but not represented archaeologically were wild cane *Arundinarie gigantia*), a basic raw material of many southeastern Indian groups (Swanton 1978:50, 244; Hudson 1978:314), and blackberry (*Rubus* sp.).

Cultigens

The trace amounts of exotic cultigens provide some of the most significant floral data. Eighteen kernels and three cupules of corn (*Zea mays*) have been identified from several units and features (Figure VI-104). The cupules may be examined morphologically, but with a single exception, the kernels are fragmentary or were greatly deformed during carbonization. The single undamaged kernel measured 1.0 cm in maximum length, twice as large as any other specimen. Unfortunately, it was recovered from the Area 2 plowzone (Soil Body A) and cannot be linked stratigraphically with the remaining (Area 2) specimens. Two other kernels were recovered from Level 4 of Unit 112 (Area 3) near the vertical transition of the two distinct soil depositions there. The remaining specimens were situated in the shallow

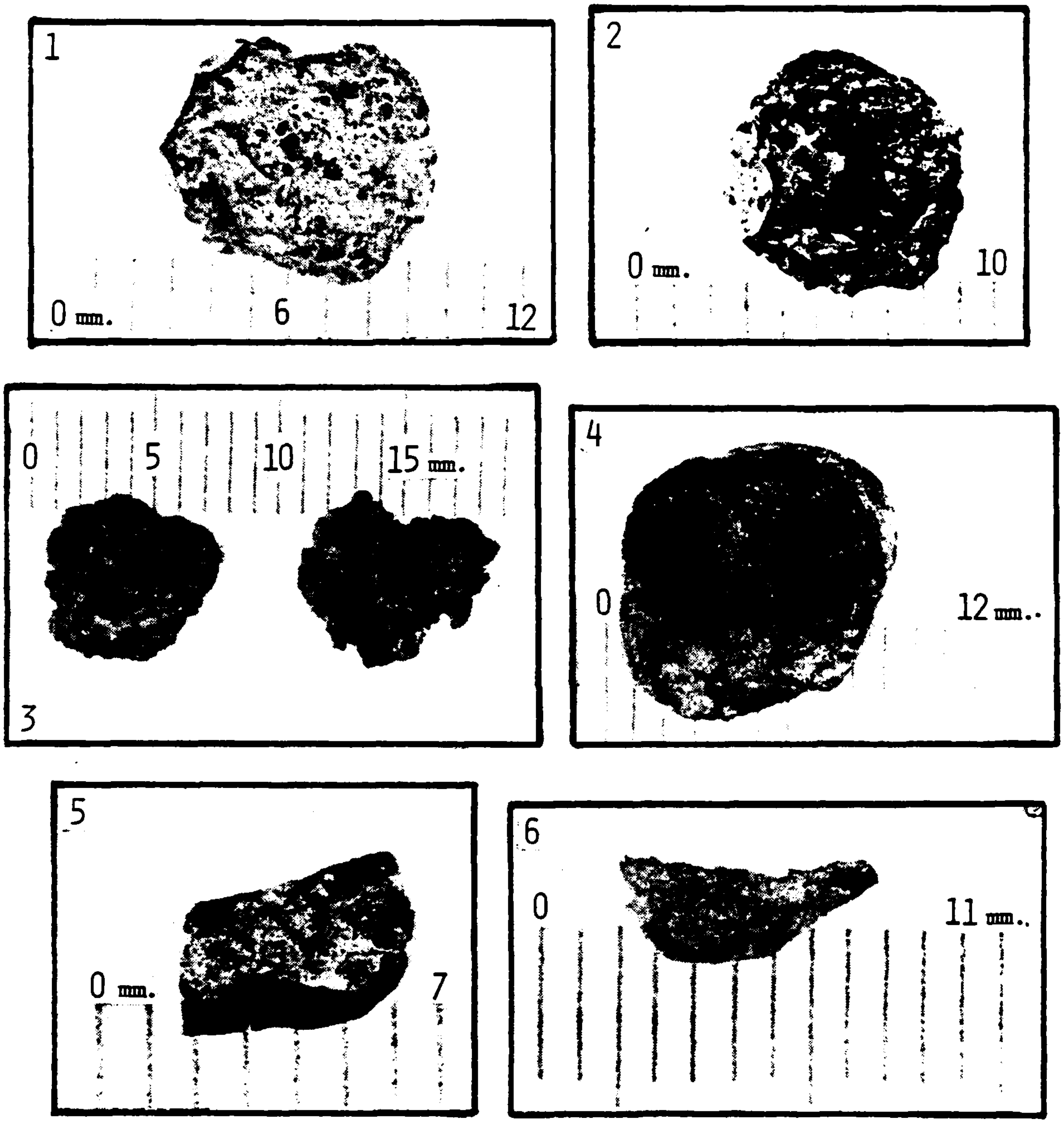


Figure VI-104. 1 and 2. Zea mays kernels from Feature 31, Area 2. 3. Zea mays kernels from level 4, Unit 112, Area 3. 4. Zea mays kernel from plowzone. Area 2, possibly a later variety than other specimens due to its large size. 5. Zea mays cupule from Feature 31, Area 2. 6. Zea mays cupule from Feature 31, Area 2, displaying measureable top to edge angles.

subplowzone midden of Area 2, and can be securely associated with that horizontally distinct component (Table VI-7).

The cupule is the basic structural unit of an ear of corn, and the examination of even single cupules may provide useful data for reconstructing type and size of the original cob. Blake and Cutler (1973:3-4) have discussed a simple means of determining the number of kernel rows in an ear from a single cupule, and a further extrapolation can be made to estimate original cob diameter. There is much debate over the degree of utility of these formulae, presented in Table VI-8, and the results are to be viewed with caution pending tests in a variety of contexts. Each cupule contains two kernels and a series of cupules (adjacent end to end) form the outer structural layer beneath the kernels. The measurement of the angle formed by the top and side of any single cupule may therefore indicate the number of rows in that ear (Figure VI-105). In general, larger angle measurements indicate larger ears with more rows of kernels. A 45 degree angle indicates four rows of cupules and eight rows of kernels to an ear, while a 54 degree angle indicates five cupule, 10 row corn and 60 degrees indicates six cupule, 12 row corn, etc. Once the number of rows is established, cob circumference is estimated by multiplying cupule top length by one-half the number of rows of kernels. This number can then be divided by "Pi" to estimate cob radius squared. The square root of this, doubled, equals estimated cob diameter. In all estimations, cupule top lengths were multiplied by 1.25 assuming of 25% shrinkage during carbonization.

Two cupules contained three measurable angles. The more intact specimen measured 35 and 60 degrees, for an average top to side angle of 47 1/2 degrees. Its top length is 2.2 mm. The second cupule measured 40 degrees on its measurable angle, and 2.05 mm in top length. It is therefore estimated that the corn of area 2 is eight row, with original cob diameters of 3.74 and 3.62 cm. These calculations do not conflict with the apparent early archaeological context (Middle Woodland Period) of the specimens.

Two fragments of squash rind (_Cucurbita_ sp.) 1/2 cm in length, were recovered from Area 2, one from Unit 137, level 4 and the second from Feature 40 (N511E464) (Figure VI-103). Squash is known to have a long history of cultivation in the United States, having been found earlier than other cultigens in a wide variety of archaeological contexts (Cutler and Whitaker 1961).

Table VI-7. Distribution of Corn (*Zea mays*) at the Hurricane Branch Site.

Location	Kernals (or frags)	Cupules
Feature 31 *(N529.5 E490	4	-
Feature 31 (N529 E488.5)	3	1
Feature 31 (N529 E489)	1	1
Feature 31 (N528.5 E488.5)	2	-
Feature 34	2	-
Feature 40 (N511 E464)	-	1
Feature 54	1	-
Unit 112, Zone II, Level 4	2	-
Unit 113, Zone I, Level 1	1	-
Zone II, Level 4	1	-
Unit 137, Zone I, Level 1	1	-
TOTAL	18	3

*Feature 31 was excavated in 50 cm by 50 cm subunits.

Table VI-8. Formulas Used in Estimating Original Cob Circumference and Radius from Cupule Top Length.*

Cupule top length (1.25)(1/2 number of rows) = estimated cob circumference

$$\text{cob}\sqrt{\frac{\text{estimated circumference}}{\pi}} = \text{estimated cob radius}$$

*assuming 25% shrinkage during carbonization

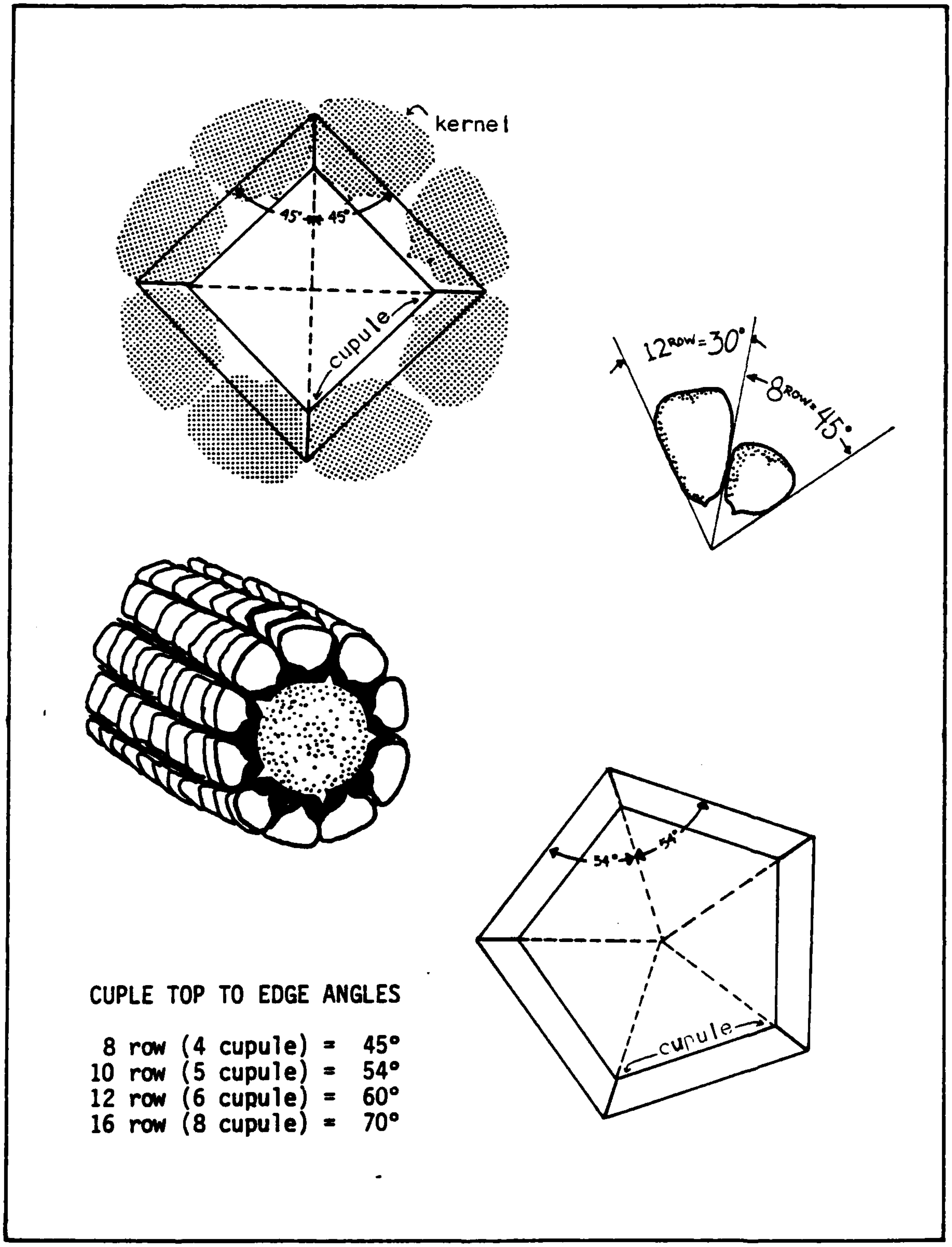


Figure VI-105. Schematic cross-section of corn cob, displaying kernel and cupule top to edge angle measurements.

Discussion

The Hurricane Branch botanical assemblage contains important implications for site habitat, seasonality, chronology and function. Included is a brief consideration of botanic remains by feature provenience, which provides specific information relating different plant species to the same spatial-temporal context. The data also provide an opportunity to discuss the introduction and use of exotic cultigens into a southeastern United States secondary river valley. Interpretations made here are based exclusively on the botanical data and comparisons with botanical assemblages from other local and regional archaeological sites.

Habitat

Wild plants collected prehistorically in the southeastern United States are most often associated with marshy backwater areas along rivers (Hudson 1978:286). However, among the Hurricane Branch Site collection, only *Iva annua* and perhaps *Phalaris* sp. can grow in areas flooded in the spring. Both are represented by only single carbonized specimens. The *Iva annua* specimen was separated from the bulk of the collection, in Area 3, while *Phalaris* is known to survive in a wide variety of habitats (Cowan 1978).

The remainder of the represented plants in general prefer better drained locations. The small leafy annuals such as *Chenopodium* sp. and *Amaranthus* sp. tend to be outcompeted in marsh settings by larger plants such as bullrush, or cat-tail (*Typha* sp.) (Angier 1978:71). The implication is that, at least during the occupation of Area 2, the site was environmentally quite similar to today's, that is, a high, relatively dry, well-drained floodplain containing a variety of useful plant species.

Seasonality

As mentioned above, a discussion of seasonality must incorporate geography, geology and contemporary observation with examination of the archaeological materials. Several plant remains, though low in frequency, carry some important implications merely because of their presence. *Amarantnus* sp., *Galium* sp. and *Desmodium* sp. have been classified as July plants in most sources (Angier 1978; Gilmore 1977, orig. 1919) and *Chenopodium* sp. seasonality varies greatly. However, *Amaranthus* sp. and *Chenopodium* sp. were observed growing on the site in great quantities in May and June. Although a specific identification of *Chenopodium* sp. seeds is not made here, all but one of the seeds have smooth pericarps which lack the reticulations usually characteristic of _C. bushianum_, the later fall variety (Asch and Asch 1978). Taking into account the high floodplain setting and southern latitude of the Hurricane Branch Site, as well as contemporary observations made during the field season, the above listed species are here considered late spring/early summer plants.

The second group of floral materials represented in the assemblage is collectable in late August to October. These plants include _Vitis_, _Rhus_, and most of the nuts with the possible exception of the slightly earlier _Corylus_. Thus, it appears that the high floodplain of the Cumberland River contains two distinct annual periods of abundant collectable resources, late spring and late summer/fall with a period of relatively lesser abundance in-between.

Feature Provenience

Although broad spatial distributions of botanical remains are discussed in Chapter VII, a brief consideration of the associated context of plant species within features is warranted here. Table VI-9 contains the distribution and association of botanical remains by features.

Feature 40, a large rock concentration, contained nearly one-third of the botanical assemblage. Included in this feature were _Chenopodium_ sp. and fall nuts and plants, such as _Carya_ sp., _Juglans_ (_nigra_ and _cinerea_), _Quercus_ sp. and _Vitis_. In addition, one _Zea mays_ cupule, one _Cucurbita_ sp. rind fragment, and all _Corylus_ sp. specimens from the site were recovered from this feature. The great variety and relatively high frequencies suggest this feature was re-used at different times of the year.

Other features also contained interesting combinations of botanical remains. For instance, Feature 35, a fired area, yielded both late spring/early summer _Chenopodium_ sp. and late summer and early fall _Rhus_ sp. together. This, along with the observation that the feature appeared to have been cleaned or swept out again, suggests feature re-use at different times of the year.

Feature 34, a small charcoal concentration, contained a _Zea mays_ kernel and a relatively high frequency of _Carya_ sp., suggesting that perhaps the fungus in that feature was a utilized plant.

The four large black stains on the site (Features 7, 8, 30, and 31) did not appear to contain more flora volumetrically than other features or surrounding soils.

Table VI-9. Botanical Data by Features (Weight in grams with frequencies in parenthesis).

FEATURE #	AREA	Hickory (Carya Sp.)	Black Walnut (Juglans nigra)	Butternut (Juglans cinerea)	Juglan-daceae	OTHER
3	2					
4	2					
5	2					(1) *Philaris caroliniana*
6	2	.0 (6)				
7	2	2.7 (87)	.1 (4)		.0 (1)	(1) *Gleditsia triacanthos* (1) unidentified
8	2	5.2 (97)	.7 (8)	.2 (2)	.0 (10)	
10	2					(1) type 10 unknown
11	2	.6 (22)	.0 (2)		.0 (2)	
12	2					
13	2					
14	1	.3 (9)	.0 (2)			
16	2	.6 (25)	.0 (2)			
17	2	.1 (1)				
19	1					
20	2	.1 (10)				
21	2	.5 (9)			.0 (1)	(1) unidentified
23	1	.1 (3)				
24	2	.0 (1)	.1 (1)			(1) *Vitis* sp.
27	2	.0 (1)		.1 (1)		
28	2	.9 (8)		.1 (1)		
29	2	2.3 (111)	.0 (1)	.1 (2)		(1) *Vitis* sp.
30	2	4.7 (111)	.1 (3)	.1 (3)	.3 (81)	(1) *Cucurbita* sp.

FEATURE #	AREA	Hickory (Carya Sp.)	Black Walnut (Juglans nigra)	Butternut (Juglans cinerea)	Juglandaceae	OTHER
31	2	8.8 (364)	1.4 (41)*	.2 (10)	1.1 (112)	(10) Zea mays kernels (2) Zea mays cupules (5) Vitis sp. (1) Galium sp. (6) unidentified
32	2					
33	2					
34	2	1.8 (72)				1.1 (78) possible fungus (1) Zea mays kernel (1) Quercus sp.
35	2	.3 (7)	.3 (5)	.5 (7)	.1 (3)	(1) Chenopodium sp. (4) Rhus sp. (4) unidentified
36	2	1.2 (24)	.3 (10)			
37	2	.3 (20)	.4 (12)			(4) Vitis sp. (4) unidentified
38	2					
39	2	1.5 (62)	.1 (2)	.3 (5)	.1 (4)	(1) unidentified
40	2	72.6 (2030)	5.5 (63)	1.1 (29)	3.3 (111)	1.0 (9) Corylus sp. (1) Quercus sp. (10) Chenopodium sp. (2) Vitis sp. (1) Amaranthus sp. (2) unidentified
42	2	.3 (7)	.0 (1)		.0 (3)	
44	2	.6 (13)		.3 (4)	.4 (25)	
45	2					
46	2					
47	2	.2 (6)	.1 (2)		.0 (2)	
49	3		.0 (2)			(1) Iva annua (1) Vitis sp. (1) unidentified
50	3	.1 (4)	.0 (1)		.1 (2)	
51	2	1.5 (57)	.2 (12)	.1 (3)	.0 (10)	
52	2	.5 (6)				
53	2	.1 (4)				
54	2	1.0 (35)				(1) Zea mays kernel (2) unidentified

*does not include complete black walnut specimen sent for C-14

This is a qualitative judgment, however, because only Feature 31 was floated in its entirety. Level flotation samples were taken from the other three (Features 7, 8, 30) which were the only designated features not completely recovered for flotation. It may be considered significant, however, that 12 *Zea mays* kernels and one *Cucurbita* sp. specimen were recovered from black stains.

Chronology

Chronologically, the overall botanical assemblage suggests an early phase of the Middle Woodland Period. This conclusion is reached from comparison with Owl Hollow sites from this time period in Tennessee documented by Cobb and Faulkner (1977). Hurricane Branch contained nutshell percentages very similar to these previously documented sites. Hickory, commonly over 90% of the assemblage, invariably dominates these sites, followed by black walnut. In comparison, the botanical collection from the Hurricane Branch Site contains a somewhat lower percentage of hickory (72.7%), but the final data analysis is expected to inflate hickory totals and therefore display a closer correlation. Perhaps even more significant is that early Middle Woodland Tennessee sites also contained trace amounts of similar corn and squash.

The single *Iva annua* seed from Feature 49, Area 3, also has implications for chronology. In the archaeological record of the Illinois River valley, *Iva* achene sizes nearly double from the Archaic (and incidentally, the modern) mean maximum length of under 3 mm to almost 5 mm during the Middle Woodland (Asch and Asch 1978:324). The Hurricane Branch specimen measures only 2.8 by 1.8 mm (uncorrected for shrinkage) which, based on these estimates, would fit the Archaic Period. In addition, *Iva* does not appear to duplicate the pattern of other plants at the site, in that it does not readily invade disturbed land or grow naturally in large stands (Asch and Asch 1978:319). This evidence suggests that Area 3 may represent an earlier Archaic occupation. Unfortunately, no larger Woodland *Iva* has been documented at other Tennessee sites to confirm this observation.

Site Function

The extremely low botanical frequencies of Areas 1 and 3 are attributed to poor preservation and possibly to less intensive occupation and utilization of plants. (This latter point is developed further in Chapter VII.) In Area 2, however, the good condition of the recovered specimens, (along with the preservation of delicate human infant and faunal remains, and dessicated cordage) also carries implications for length of occupation and site function, as well as for degree of preservation.

The identification of discrete spatial loci of specific plant species, for example in Features 35 and 40, suggest that the use of particular plants was associated with the domestic activity areas identified across the site through the analysis of other artifactual categories. In other words, inhabitants at the site during the Woodland Period in particular utilized plants in connection with the internal spatial and functional structure of seasonal activities at the site; or many of the other activities performed in the South Block area were structured around vegetal manipulation.

Although the percentages of nut shell are comparable with Middle Woodland Tennessee sites, the absolute frequencies differ greatly. Sites in the Duck and Elk River valleys are clearly villages, as evidenced by their substantial structures (Cobb and Faulkner 1977). Single features have yielded as much as 100 lbs. (approximately 50,000 g) of botanical specimens (Crites 1982: personnal communication). The Hurricane Branch Site, on the other hand, only produced a total of slightly more than 200 g of flora. Given the low quantity of plant remains and the estimated late spring and fall seasonal availability of certain feral plants, it is suggested that the Hurricane Branch Site was temporarily utilized during specific times of the year, perhaps as part of an organized plant collection/garden harvesting round.

Early Cultigen Use

The low percentage of cultigens in the overall assemblage and the estimated small size of the corn in Area 2 suggest that during the Middle Woodland there was only minimal use of exotic cultigens. Also suggested is that gardening activities at the Hurricane Branch Site were possibly coordinated with the collection of certain seasonally available feral plants. Given this data, a reasonable expectation would be to detect specialized gardening areas and associated tool assemblages in spatial analysis.

The general coordination of collecting and gardening activities at the Hurricane Branch Site with the feral plant availability time framework also suggests that early corn/squash horticulture at the site would not have required major techno-environmental adjustments at its inception. Instead it appears that the degree of socio-cultural change necessary for the incorporation of horticulture would have been minimal, with early exotic cultigens merely being a minor supplement to an existing, well-established plant collection practice.

Faunal Remains

by
Nancy O'Malley

Introduction

The identification of faunal remains from archaeological sites has been recognized as a useful and informative avenue of analysis for many years. Such analyses have received additional impetus from the increasing use of the cultural ecological approach and interest in the economics of prehistoric peoples. Such studies may also contribute to the reconstruction of paleo-environmental conditions.

Theoretical Considerations of the Exploitation of Animals

The interaction of human and animal populations is a complex network of behavior related to both the social, ritual and economic spheres of human behavior and the composition, diversity, demography, and biological characteristics of faunal communities. Many factors contribute to the process through which certain species are targeted for exploitation, specimens are successfully obtained, the processing of these animals for food, tools or other needs takes place and so on, leading to the inclusion of the physical evidence of the process within the archaeological record. Sorting out the various aspects of this process is fraught with difficulties simply because so many factors and interactions are involved. A few of the more important ones are briefly outlined.

Prehistoric groups exploited animals for food, clothing, raw materials for tools, ornament or other items, ritual uses and the like. While their technological inventory of weapons, traps, and other tools and devices gave them a decided advantage in the pursuit of wild game, a certain degree of unreliability is implicit in hunting activities. Not only does hunting require considerable skill on the part or the hunter (whether it involves competence with a spear or bow and arrow or the ability to construct an effective trap or snare), but more importantly an intimate knowledge of the characteristics and habits of the desired species. Even with this formidable repertoire of skills and knowledge, the exploitation of animals is not as secure an activity as other pursuits such as gathering wild foods or horticulture. This is in part due to variability among seasonal patterns of faunal availability as well as the sometimes wide variations in frequency of certain animal species from year to year.

Another point to consider is that humans are, in many cases, selective as to the animal species they exploit. The Eastern Woodlands Region on the whole supports a rich and diverse faunal population yet, increasingly, archaeological and ethnographic evidence suggests that only a relatively small proportion of this bounty was actively exploited and reliance was heavier on some species than on others. An illustration of restrictions placed on exploitation of animals is the numerous "taboo" species which are documented for historic Indians of the United States (Swanton 1979). Reasons for such taboos were varied, including avoidance because a given species was considered sacred (as in totems), or beliefs that certain animals "did not taste good," were poverty foods or the like. While certain species may have been periodically exploited under special circumstances (such as times of resource stress), a variety of studies have documented selection criteria which take the amount of energy necessary to exploit certain species into consideration, resulting in a concentration on species which can be hunted most efficiently (Hayden 1981). All of these factors affected the selection of species for exploitation.

In addition to the selection process, the methods by which animals were caught affect the archaeological record. While "hunting" is typically considered to involve the use of weapons such as the bow and arrow, the dart and atlatl or a spear, the concept of "food getting" (excluding the utilization of wild plants and cultigens) may include the use of such devices as traps or snares, animal drives or surrounds, clubbing or fishing (which in itself involves diverse techniques and tools). These techniques may result in large numbers of specimens being caught during a single event (such as a drive or fish harvest) or much more limited numbers over a longer period of time (such as in single kills). In some cases, only a portion of the kill may be brought to an occupation site or the animal simply consumed elsewhere. Binford (1977:79-81) illustrates with ethnographic data that different parts of animals may be deposited in archaeological contexts during different seasons of the year. These possibilities along with many others affect the type, diversity, composition and quantity of fauna which are brought to an archaeological site.

Processing of the fauna for economic use is yet another factor. Bone, under certain favorable conditions, may be quite durable; its preservation potential may be enhanced by certain processing techniques such as some forms of cooking.

However, other processes such as crushing the bones for marrow extraction, excessive boiling, or reducing bone to ash through burning mitigates their preservation. Activities such as disposal of bone debris away from the site or consumption by other animals (domesticated or wild) may also remove the faunal materials from the archaeological record.

Finally, another factor is the effect of the general processes of physical and chemical decomposition which may completely or greatly eliminate faunal evidence before the remains are recovered during archaeological investigations (Chaplin 1975:16-17). These effects represent what Schiffer (1972) terms "n-transform," and may affect not only the quantity and composition of the faunal record but also its spatial distribution. Such processes are highly dependent on a complexity of physical and chemical decomposition which may completely or greatly eliminate faunal evidence before the remains are recovered during the archaeological investigations. Such processes are highly dependent on a complexity of physical and chemical variables of soil, climate and the like. For example, from an environmental perspective, the Hurricane Branch Site has a differential potential for preservation across its extent. As has been previously discussed in Chapter V, the site is composed of a number of soil bodies which have varying textures and range of particle size. In general, it can be surmised that faunal preservation is likely to be least in clayey soils where the shrink-swell capacity is high and a more acid pH value is maintained. Acidity attacks bone in particular while shell suffers the greatest in alkaline conditions. Alternately, the sandy and silty loams on other portions of the site enhance preservation since they are not as prone to excessive shrinking and swelling and are relatively more alkaline. However, the alluvial setting of the site as a whole presents a situation in which considerable ground water moves through the sediments on a regular basis, thereby creating a favorable environment for the physical and chemical breakdown of organic remains by encouraging decompositer microfauna in the soil. Faunal material may also be displaced from its original locus of abandonment through various, natural agents, such as flooding, erosion, surface deflation, etc.

Clearly, by the time an archaeologist recovers the evidence for prehistoric exploitation of animals, it has likely undergone considerable transformation and modification sometimes to the point where very little can be surmised. In some respects, the faunal assemblage from the Hurricane Branch Site falls into a less than satisfactory category. However, by utlizing other types of information from the site, an approximation of the factors affecting the assemblage can be made. This approximation is useful in interpreting the limited evidence which is available.

The following sections include a discussion of the methodology used to collect and analyze the sample, a description of the nature of the sample, the results of the analysis and a summation which outlines an incomplete reconstruction of the prehistoric exploitation of animals by the occupants of the site as well as interpretation of the meaning of the faunal data relative to an understanding of the site as a whole.

Sampling and Analytical Methodology

The bone assemblage includes specimens collected during the course of excavations, during the water screening process in the field and later during the flotation and sorting of the feature and unit fill samples. Each specimen was examined individually to determine their potential for identification. All potentially identifiable specimens were separated from the clearly unidentifiable remains. Attempts were then made to identify the specimen as specifically as possible. Limited comparative faunal collections at the University of Kentucky were utilized as well as various published and unpublished keys and references (Olsen 1964, 1968, 1979; Oberdiech n.d.; Bennett 1977; University of Kansas 1977; Howard 1929; Gilbert 1973). Dr. Lathel Duffield also provided assistance for some of the identifications.

The Nature of the Sample

Faunal specimens recovered during the investigations of the Hurricane Branch Site account for only a small proportion of the total artifactual assemblages, numbering minimally 1,214 bone specimens (with a total weight of approximately 229.5 g), five mussel shells (one bivalve and four fragments) and 43 terrestial snails. The bulk of the sample is comprised of unidentifiable fragments of burned and unburned bone, often of exceedingly small size (1 - 10 square mm). Only one mussel specimen was identifiable. The bulk of the snails were identifiable to species.

Results of the Analysis

Three categories of fauna (bone, mussel shell and snail) are included in this section. Each category will be discussed separately.

Bone

Since published works concerning the identification of faunal bone are generally limited and the comparative collections available for study at the University of Kentucky are not extensive, the identification of the bone specimens was restricted to major animal groups. Added to the identification difficulties was the small number of identifiable elements from the collection, many of which are in fragmentary condition.

Identification of Animal Groups

The sample (Table VI-10) was divided into the following subdivisions: 1) unidentifiable fragments for which no estimate of general animal size was made (N=339); 2) unidentified bone which probably was derived from medium or large animals (n=c.644); 3) unidentified teeth fragments (probably mammal) (n=11); 4) small mammal bones (n=108); 5) deer (n=c.40); 6) amphibians such as frogs or toads (n=26); 7) turtle (n=ca.30); 8) possible bird (n=1); 9) reptiles such as snakes or lizards (n=8); 10) fish (n=5). In terms of total weight, the collection is probably biased toward larger animals since approximately 78% of the total weight of thefaunal material is attributable to the larger animals (including deer). However, the smaller animal groups are also represented as indicated above, and, despite the low frequencies for these categories, useful information may be derived from their presence.

Incidence of Burning Within Animal Groups

With respect to the presence of burned bone, just under half (46% or 106.3 g) of the total weight of the faunal specimens exhibit some burning. Again, the majority (71% or ca.75.3 g) of the burned bone is attributable to deer or other large animals with the remainder being split between unidentified fragments (23% or 23.7 g) and turtle (6% or 6.7 g).

The small mammal, reptilian, bird, fish and other amphibian classes do not exhibit signs of burning.

Use of Bone in Tool Manufacture

Only one instance of the use of bone as raw material was noted. This artifact is an awl made from a deer ulna. The broad end has been ground down to form a smooth rounded termination for holding in the hand. The other end is splintered but presumably was modified to a sharp point for piercing. The tool was recovered from Feature 40, a ring-shaped concentration of small limestone rocks within a small basin.

Table VI-10. Incidence of Bone at the Hurricane Branch Site.

PROVENIENCE	FREQUENCY burned	FREQUENCY unburned	IDENTIFICATION	WEIGHT (g) burned	WEIGHT (g) unburned
Surface					
	1		possible deer	1.1	
		1	mammal tooth fragment		0.2
	14	19	unidentified (probably large mammal)	4.0	4.5
MTSU collection					
		1	deer calcaneum (immature)		1.1
		1	unidentified splinter (large animal)		0.6
Unit 102 Level 1	3		unidentified (2 specimens - probably large animal)	3.2	
Unit 103 Level 2	1		unidentified	0.1	
Unit 105 Level 5	1		unidentified	0.5	
		2	possible turtle		1.0
Unit 106					
Level 1	1		unidentified	0.4	
Level 5	1		unidentified	0.1	
Level 6	c. 6		unidentified	0.2	
Unit 107 no vertical provenience	1	1	unidentified	0.1	0.3
Level 3	1		unidentified	0.4	
Unit 109 Level 2	4		unidentified	0.4	
	5		turtle	0.6	
Unit 110 Level 1	2	3	unidentified	0.4	0.4
		1	turtle carapace		0.1

Level 2		1	unidentified (large animal)		1.0
Unit 111					
Level 2		2	unidentified teeth		0.1
Level 3	1		unidentified	0.1	
Unit 112					
Level 1	1	2	unidentified	0.7	0.6
Level 2	4		unidentified	1.1	
Level 4		2	unidentified		0.6
Unit 114					
Level 1	1		unidentified	0.1	
		1	deer phalange		0.8
Level 2	1		unidentified	0.2	
Level 3	1		deer antler tine	0.6	
	1		unidentified	0.2	
Unit 115					
Level 1	1		unidentified (large animal)	1.1	
Unit 116					
Level 1	1	1	unidentified (burned specimen - large animal)	0.6	0.1
Level 2	4	1	unidentified	1.1	0.2
Level 2b	5		unidentified	1.0	
Unit 118					
Level 2	1		unidentified	0.1	
Unit 125					
Level 1	1		unidentified (large animal)		0.4
Level 2		2	unidentified (large animal)		0.3
	2		turtle carapace	0.5	
Level 3	5		turtle carapace	3.6	
Level 4	1	2	unidentified	0.1	0.2
	2		turtle carapace	0.6	
Level 6		1	unidentified		0.1
Unit 126					
Level 2	1		unidentified	0.2	
Level 3	c. 16		unidentified (probably large animal)	2.1	
Level 4	10		unidentified (probably large animal)	2.9	
Level 5	2		unidentified	0.6	

Level 6	6		unidentified	0.1	
Unit 128					
Level 2	1		unidentified	0.1	
Unit 129					
Level 3	2		unidentified	0.4	
Unit 131					
Level 4	1		unidentified (probably large animal)	0.4	
Unit 132					
Level 4	7		unidentified	1.3	
Unit 133					
Level 1	11	1	unidentified	0.7	0.1
Level 3	4		unidentified (probably large animal)	1.1	
Level 4	9		unidentified (probably large animal)	2.7	
Unit 134					
Level 2		2	unidentified		0.9
	1		turtle carapace	0.7	
Level 3	4	1	unidentified (unburned specimen - large animal)	0.6	0.6
	1		turtle carapace	0.2	
Level 4	5		unidentified (probably large animal)	1.1	
Unit 137					
Level 1	1		unidentified (probably large animal)	0.2	
Level 2	1		unidentified	0.4	
Level 3	2	c. 30	unidentified (probably large animal)	0.6	2.6
Level 4	16	1	unidentified	0.5	0.3
Level 5		1	unidentified (probably large animal)		0.5
Unit 138					
Level 2		6	unidentified		0.1
Level 3	8		unidentified	0.1	
		2	fish centrum		0.5

		4	unidentified teeth (probably mammal)		0.2
Level 4		3	unidentified		0.1
Unit 139					
Level 2		4	unidentified		0.1
Level 3	8		unidentified	0.3	
Level 4		11	unidentified (large animal)		1.9
Unit 140					
Level 2	1	1	unidentified	0.2	0.1
Level 3	4		unidentified	0.5	
Unit 142					
Level 3	3		unidentified	0.4	
Unit 143					
Level 3	1		unidentified (large animal)	0.4	
Level 4	1		unidentified	0.1	
Unit 146					
Level 4	2		unidentified	0.1	
Level 5	6		unidentified	0.1	
Unit 147					
Level 2	3		unidentified (large animal)	1.1	
Level 4	*		unidentified	0.1	
Level 5		13	unidentified (probably large animal)		2.0
Unit 148					
Level 3	5		unidentified (probably large animal)	1.6	
Level 4	14		unidentified (probably large animal)	1.7	
Level 5	1		probably deer long bone	2.0	
Unit 149					
Level 2	2		unidentified	0.6	
Level 3	1		unidentified	0.1	
Level 4	trace		unidentified	0.1	
Unit 150					
General	4		unidentified teeth (probably mammal)	0.1	

Level 3	5		unidentified (probably large animal)	0.8	
Level 4	28	1	unidentified (unburned specimen - probably large animal)	1.7	0.8
Unit 151					
Level 1		2	unidentified		0.4
Level 2	11		probably large animal	5.1	
Feature 3		7	small animal		0.3
		1	large animal		0.7
		6	soft shell turtle plastron		2.6
Feature 4	1	2	unidentified	0.1	0.9
Feature 5A		1	small animal		0.1
Feature 5C		7	small animal		0.1
		3	possible fish		0.1
Feature 6		5	unidentified		0.1
Feature 10	7		unidentified	0.8	
Feature 20		30+	deer long bone and associated fragments		53.4
Feature 29		1	amphibian		0.1
	89		small animal	1.1	
Feature 30	5		unidentified (one specimen - large animal)	1.5	
Feature 31	39		unidentified	1.3	
	1		turtle carapace	0.1	
Feature 35	7	6	unidentified	0.2	0.7
		1	probable rodent metacarpel		0.1
	4		turtle carapace	0.4	
Feature 36		3	unidentified		0.1
Feature 37	2		unidentified	0.1	

Feature 39	24		unidentified	2.3	
	1		unidentified phalange	0.1	
Feature 40	200+	212	unidentified (mixed size mammals - mostly medium or large)	17.1	17.6
		8	reptilian vertebrae		0.1
		1	small mammal atlas		0.2
		2	small mammal phalange		0.1
		1	small mammal tarsometatarsi		0.1
		25	amphibian (probably frog or toad)		0.4
	1		probable deer	1.9	
		1	deer ulna awl		11.5
Feature 42	4	2	unidentified	0.1	0.7
Feature 47	4		unidentified	0.1	
Feature 49	5		unidentified	0.1	
Feature 51	3	34	unidentified	0.1	5.8
		7	large mammal long bone fragments		3.9
		1	bird tarsometatarsi		0.1
Feature 54	37+		large animal (probably deer)	13.3	
	1		deer occipital condyle fragment	4.5	
	1		deer skull fragment	1.6	
	1		deer ulna fragment	1.8	
TOTAL	720+	494+		106.3	123.2

*This symbol indicates samples which were so fragmentary and minute in size that they could not be counted.

Bone Recovery Within Different Archaeological Contexts

Faunal specimens were recovered from surface, unit level and feature contexts. Surface collected bone is the smallest category, comprising only 15 burned specimens weighing 5.1 g and one unburned mammal tooth fragment weighing .2 g. This bone probably is from deer or other large animals.

Two specimens from the Middle Tennessee State University investigations (Fox 1977) also represent deer or a large animal. One of these specimens is an immature calcaneum fragment (Dr. Lathel Duffield 1981: personal communication). This specimen was recovered from one of the test pits at a level designated .8 to 1.1 feet below surface. The other specimen is from an unknown depth. The horizontal provenience of these specimens is unclear.

A total of 32 excavation units yielded faunal specimens which collectively comprise 31% of the total weight of the faunal assemblage. Much of this bone was recovered through water screening which probably affected the preservation, particularly the unburned specimens. Only 17 g of the 69.6 g of bone from the unit levels is unburned. This low proportion possibly suggests that burned bone survives the water screening process better than unburned bone. The unit level sample also appears biased toward representation of larger animals which is expected given the principal method of recovery. However, evidence of turtle and fish were also recovered from unit levels during water screening. Therefore, while water screening probably affected recovery of extremely small or fragile faunal specimens, it did not completely eliminate evidence of animal bone with survival potential.

Twenty features yielded 148.4 g of bone which comprises 65% of the total weight of the faunal assemblage. Since most of the feature fill was floted rather than water screened, recovery of small and/or fragile specimens was greatly enhanced. However, the higher survival potential of bone from larger animals is again clearly in evidence. Proportions of burned and unburned specimens from features are reversed in comparison to surface specimens with a total unburned weight of 99.8 g compared to 48.6 g of burned bone. Assessment of the trends noted above is complicated by the intensification of activity which may increase the level of bone disposal around or in features. Generally, the majority of bone is likely to be deposited near or in features since most on-site cooking, processing and storage is assumed to take place in association with such loci. Preservation of bone may also be enhanced in features due to the protective effects of enclosure by clay or rock lining in pits, or increased alkalinity due to phosphate/organic enrichment. Therefore, features represent "pockets" of improved preservation across a site somewhat analogous to microniches within a larger ecological system.

Cultural Affiliation of Faunal Assemblage

The majority of bone was recovered from Woodland deposits. Archaic deposits yielded only 21+ specimens (totalling 3.7 g). Five of the specimens (totalling .1 g in weight) were recovered from Feature 49 which is inferred to be Archaic in date from the absence of ceramics and presence of small IVA seeds. The remainder was recovered from Level 5 of Unit 105 and Levels 4 and 5 of Unit 147.

All other bone recovery (listed by provenience in Table VI-10) was from Woodland deposits. Therefore, dietary reconstruction will focus primarily on the Woodland occupation.

Association of Bone by Feature Function

Faunal specimens were recovered from 11 types of features (Table VI-11). The types of bone recovered from each feature type are discussed separately.

A small amount of bone representing small and large animals, soft shell turtle and possibly fish was recovered from the two infant burials (#3 and 56). None of this bone exhibits signs of burning. The small amount may be attributable to fortuitous inclusion through use of midden for burial fill. The presence of riverine animals (softshell turtle in Feature 3 and possibly fish in Feature 5C) is an intriguing coincidence which may have a cultural meaning; however, the small sample precludes firm conclusions regarding deliberate inclusion of food items in the burials.

Bone from two fired areas (#10 and 35) typically is burned. The unburned component is a possible rodent metacarpal which is probably a fortuitous addition. Although the frequency of individual pieces is relatively high for this feature type, total weight is rather low, suggesting that bone destruction is generally high. None of the burned bone was identified as to animal group; however, it probably represents a primary deposit associated with feature use.

Faunal material from two rock-lined pits (#29 and 39) also are all burned. Unfortunately, none of it is identifiable as to animal group except for one specimen which probably is from a small animal. Both features contained wood charcoal lenses and one exhibited evidence of *in situ* burning; therefore, the bone is probably also representative of a primary deposit.

Table VI-11. Animal Bone Associated with Feature Types on the Hurricane Branch Site.

FEATURE TYPE	FEATURE NO.	ASSOCIATED ANIMAL GROUP	TOTAL WEIGHT RATIO OF BURNED TO UNBURNED
Infant burial	3	small animal large animal softshell turtle	0.0: 3.6
	5C	small animal (possible fish)	0.0: 0.2
Fired areas	10	unidentified	0.8: 0.0
	35	unidentified (possible rodent metacarpal)	0.2: 0.8
Rock lined pit	29	amphibian	0.0: 0.1
		small animal	0.1: 0.0
	39	unidentified phalange	2.4: 0.0
Straight sided round pit (storage/refuse pits)	4	unidentified	0.1: 0.9
	5A	small animal	0.0: 0.1
	31	unidentified turtle	1.4: 0.0
	42	unidentified	0.1: 0.7
	49	unidentified	0.1: 0.0
Shallow pit with sloping sides and round base	54	large mammal (possible deer) deer	21.2: 0.0
Small cylindrical pit (postmold)	6	unidentified	0.0: 0.1
	47	unidentified	0.0: 0.1
Rock concentration	36	unidentified	0.0: 0.1
	40	medium to large animals reptile small mammal amphibian deer	16.7:28.4
Rock cluster	51	unidentified large animal	0.1: 9.8

Charcoal concentration	37	unidentified	0.1: 0.0
Bone concentration	20	deer	0.0:53.4
Black stain	30	unidentified large animal	1.5: 0.0

Fauna from five straight-sided pits with round bases (#4, 5A, 31, 42 and 49) contain both burned and unburned bone from small animal, turtle and unidentified groups. For the pits collectively, burned and unburned specimens are equally represented. On an individual basis, two features (4 and 42) exhibited predominantly unburned bone with a minute amount of burned bone; two (#31 and 49) contained only burned bone; one (#5A) contains only a small amount of unburned bone. In no case is the frequency or weight of bone large in any of the pits. These features are interpreted as storage/refuse pits. Judging from the paucity of bone, the faunal deposit is probably secondary in these features.

A relatively sizeable proportion of deer or large animal bone, all of which are burned, was recovered from a shallow pit with sloping sides and a round base (#54). This feature contained the third greatest amount of bone by weight of any feature. In spite of the burned nature of the faunal specimens, the feature exhibited no evidence of <u>in situ</u> burning; therefore, the bone is probably a secondary deposit, perhaps as part of refuse disposal.

Two small cylindrical pits interpreted as postmolds (#6 and 47) contained a very small amount of unburned bone. Its presence is suggested to be due to the incorporation of midden fill containing the bone into the hole which held the post.

Two rock concentrations (#36 and 40) also yielded faunal specimens. Feature 36 is quite small and is not enclosed in a pit. No evidence of <u>in situ</u> burning is apparent in the feature nor is the bone burned; however, the limestone appears to have been exposed to fire. The function of this feature is problematical and the paucity of bone offers little to the interpretation.

Feature 36 is quite different from the other rock concentration (Feature 40) which yielded considerable bone. Feature 40 yielded a greater variety of bone than any other feature excavated at the site. The greatest proportion of bone by weight represents medium to large size animals. Equivalent amounts of these specimens are split between burned and unburned categories. The reptilian, small mammal and amphibian specimens in this feature are all unburned. This feature also yielded the only bone tool recovered during the excavations. The tool is a deer ulna awl presumably used for some piercing or perforating function. Its presence is somewhat anomalous given the postulated plant processing or cooking function for this feature. Evidence is also lacking to suggest that the small mammals, reptiles and amphibians represented in the feature were exploited for food. Rather, they probably represent incidental inclusions of naturally occurring fauna on the site. The organic-rich, loamy feature fill constitutes an excellent habitat for burrowing animals. Such animals may also have been attracted to the bone scraps and other edible detritus commonly deposited in refuse pits.

One rock cluster (#51) yielded a very small amount of burned bone and a moderate amount of unburned bone. The bulk of the bone is unidentified; however, long bone fragments from large animals and a single element which appears to be avian in origin were also recovered. Feature 51 constitutes three distinct rock concentrations, each of which is similar to Feature 36. The function of these features is problematical but the relative paucity of burned bone does not support a cooking function as least as far as game is concerned. Lack of _in situ_ burning in either Feature 36 or 51 suggests that they may be secondary deposits.

A very small amount of burned bone was recovered from one of the charcoal concentrations (37). The paucity of bone may suggest either that bone was not processed by fire, but is fortuitously present, or that it was nearly completely incinerated at this locus.

A small bone concentration (#20) consisting of a number of deer long bones and associated fragments was excavated. The bones occurred parallel to each other, apparently on the surface rather than in a pit. The poor condition of the bones precludes identification as tools. However, they represent an anomaly in terms of bone occurrence on the site.

One of the black stains (#30) contained a small amount of burned bone. Considering the total size of the feature, bone constitutes a negligible part of its contents. The bone probably is also a fortuitous inclusion.

Mussel Shell

Only five examples of mussel shell were recovered. Four of these are unidentifiable fragments. One is half of a bivalve which was identified as _Plageola lineolata_ (Samuel Call 1981: personal communication). This type of mussel typically inhabits medium to large rivers in or round a riffle or shoal area with moderate current (Samuel Call 1981: personal communication).

Two unidentifiable specimens were collected from excavation units (1 each from Level 2 in Unit 135 and Level 4 in Unit 137). The remaining three were collected from Feature 40. These specimens appear to be burned. Since these mussel shells occur out of their normal habitat, one may reasonably conclude that they comprised a portion of the aboriginal dirt.

Snail

A total of 43 terrestial snails or snail fragments were recovered during the excavations. Most of these were identifiable to species. Table VI-12 presents the species to which these specimens belong. Details concerning the habitat of terrestial snails of these types are generally lacking due to a paucity of research which has been carried out. However, two of the species Mesodon thyroidus and Ventridens ligera) prefer lower, moist areas while the remaining species are fairly ubiquitious with wide habitat requirements (John Petranka 1981: personal communication). With the exception of one specimen from Feature 30, none of the snails appear to be burned and most are in a very good state of preservation. Their association within the archaeological deposits may well be forturitous since nearly all the snail was recovered from the surface or in plowzone. Only two features (30 and 50) yielded evidence of snails. One specimen was recovered from Level 4 in Unit 102 and minute traces were in Level 4 of Unit 135. Nineteen of the remaining specimens were in plowzone deposits of 12 units. Twenty-one snails were collected from the surface. Based on these distributions, snails are considered more likely to be later inhabitants of the site and unrelated to the cultural occupation.

Conclusions

The foregoing has presented, in considerable detail, the nature of the faunal assemblage from the Hurricane Branch Site. The purpose of this section is to provide a faunal dietary reconstruction for the site occupations. This task is limited by one major factor: the relatively low frequency of bone within the archaeological deposits. As has been previously mentioned, the preservation potential for faunal specimens (principally bone) is favorable for the site as a whole. The only exception is the clayey, more acidic portions associated primarily with the Archaic deposits. Expectedly, bone recovery from these deposits was quite low. However, the loamy, more alkaline soils of the Woodland component do not create unfavorable conditions for bone preservation. Since the vast majority of bone was recovered from Woodland deposits, the main discussion of this section will focus on Woodland animal diet. Also, since mussel shell is present in extremely low amounts, the dietary reconstruction will primarily emphasize the exploitation of vertebrates.

Table VI-12. Snail Species Identified from the Hurricane Branch Site.

Family	No. of Specimens	Provenience
Polygyridae		
Mesodon clausus (Say)	1	N367E532 (surface)
Mesodon thyroidus (Say)	11	N368E532 (surface)
	1	N487E532 (surface)
	3	N304E492 (surface)
	1	N468E512 (surface)
	1	N360E500 (surface)
	1	N288E484 (surface)
	1	Unit 110 (Level 1)
Mesodon zaletus (Binney)	1	Unit 107 (Level 1)
	1	Unit 111 (Level 1)
Mesodon inflectus (Say)	1	General Surface
	1	Unit 102 (Level 4)
	1	Unit 105 (Level 1)
	1	Unit 109 (Level 1)
	1	Unit 111 (Level 1)
	1	Unit 116 (Level 1)
	1	Unit 136 (Level 1)
Anguispiridae		
Anguispira alternata (Say)	1	Unit 107 (Level 1)
Haplotrematidae		
Haplotrema concavum (Say)	3	Unit 107 (Level 1)
	1	Unit 108 (Level 1)
	2	Unit 111 (Level 1)
Zonitidae		
	1	N272E484 (surface)
Ventridens ligera (Say)	1	Unit 104 (Level 1)
	1	Unit 123 (Level 1)
	1	Unit 143 (Level 1)
Unidentifiable	1	Feature 30
	1	Feature 50
	1	Unit 121 (Level 1)
Total	43	

Given the relatively good preservation potential for bone on the site, particularly in the Woodland deposits, the comparatively small volume of bone presents an intriguing situation relative to reconstruction of aboriginal exploitation of animals. Several factors could account for this low volume. These need not have acted independently, but may be interrelated. One explanation is that the original population of bone associated with the site occupation(s) was never very large. The implication here is that meat did not constitute a major portion of the total aboriginal diet at the site. Another possibility is that meat was brought into the site as flesh with few bones. This implies that only selected portions of at least the larger animals were transported to the site. A third possibility is that processing techniques reduced the bone to the point where its survival potential was severely lessened. Agents of attrition such as dogs, physical weathering or the like may have effectively reduced the bone to very low volumes. Finally, disposal of the bone may have been taking place elsewhere, such as the nearby Cumberland River or in other areas away from the immediate occupation area.

Keeping these limitations in mind, therefore, the following discussion of animal diet reconstruction will be couched in terms of a general subsistence model encompassing four major components: selection/acquisition, processing, storage and disposal. These divisions will be discussed for the Archaic as well as the Woodland occupations.

The Archaic Occupation

This section is necessarily short since faunal specimens from Archaic deposits are extremely sparse. In terms of acquisition of animals, the only evidence for the Archaic diet is some turtle carapace and a few bones which probably come from large animals. Therefore, very little can be said as to the specific of the selection and acquisition of animals from the local environment. Processing appears to have involved some cooking since some of the unidentified bone is burned; however, neither the turtle or the large animal bone appears to be burned. However, in absence of more data, any further comments on processing amount to sheer speculation. Storage is similarly difficult to reconstruct since only .1 g of the Archaic bone was found in a feature context (a small pit) and the remainder was incorporated into the general midden deposit. Therefore, for the animal portion of the diet, reconstruction for the Archaic occupation is largely an exercise in futility.

The Woodland Occupation

Compared to the Archaic component, the faunal assemblage from Woodland deposits is substantially improved. However, the low volume of bone in general and identified bone in particular mitigates against very specific reconstructions of the role of animal food in the aboriginal diet for the Woodland occupants. The selection/acquisition phase of the food quest may be inferred from the animal groups which are represented on the site. Evidence includes deer and other large animals, turtle, small animals, reptiles, amphibians, bird, fish, mussels and snails. However, the presence of an animal type on a site need not necessarily indicate that it constituted a portion of the diet. One must expect that any environmental setting such as an archaeological site will contain a community cf animals which are natural inhabitants and with whom human occupants may coexist. This community includes numerous microfauna as well as small animals such as snakes, lizards, squirrels, etc. Such animals may be particularly attracted to occupation sites because of the increased amount of food scraps in such loci. Therefore, interpreting an archaeological faunal assemblage must consider the presence of naturally occurring fauna which may mistakenly be identified as a culturally induced phenomenon.

One may approach such a problem by noting the distribution of the various animal types, the types of archaeological contexts with which they are associated, the presence of evidence for cultural manipulation such as burning, butchering marks, etc., or other observations. Ethnographic documentation of animal exploitation is also useful in determining which animals were included in the diet.

For the Hurricane Branch Site, the faunal remains suggest that minimally, deer, turtle, fish and mussels were being exploited for food. These animals are included for the following reasons. Deer and turtle remains usually occur in the form of burned specimens and deer and other large animal bone constitute the bulk of the faunal assemblage.

The ethnographic literature is abundantly supplied with references concerning deer exploitation. The literature also supports the consumption of turtle. It should be pointed out, however, that these animals as well as the others represented in the assemblage also are documented as being used for purposes other than food. In fact, the presence of a deer ulna awl from Feature 40 is illustrative of the multiple uses to which deer was put. Deer and turtle were distributed among both unit level and feature contexts; however, several features contained burned specimens of deer or turtle. Unfortunately, these specimens were not identified in features exhibiting primary burning, but appear to be secondary deposits principally. Fish and mussels are included in the food list because they are out of their normal habitat. While it is possible that these remains were transported to the site by animal agents, their archaeological context argues for a human element; in particular, the mussel shell which was recovered from a feature (#40). It is also burned and the likelihood is high that it was processed at this feature. The other animal categories are very problematical because, in nearly every case, the bones are unburned. Only in one instance (#29) were burned bones (which probably represent small animal(s)) noted. Every other instance of small animal, reptilian and amphibian bone (excludng turtle) are unburned. Qualitatively, the specimens also appear "fresher" than the other bone which may indicate that they are more recent. Also of note is the distribution of these bones across the site. None were recovered from the excavation unit levels; however, this absence is probably due to the water screening process which is not particulary favorable to their recovery.

Excluding the feature which contained burned small animal bone, only five features yielded such specimens. Two of the features are the infant burials; one is a fired area in which all of the bone except for the rodent metacarpal is burned; one is a feature interpreted as a storage/refuse pit; and the last is a probable cooking locality which yielded unburned reptile, small animal and amphibian remains. Two important points are to be derived from these observations. The small animal, reptile and amphibian bone is unburned even when it occurs in contexts of primary burning. All of these bone types are concentrated in features which either have loose fill or were a likely locus for food debris disposal. In some cases, both conditions are present, which supports the conclusion that these animals probably are naturally occurring fauna which burrowed into the archaeological deposits, possibly well after site abandonment. While the possibility still exists that these osteological remains are present in the site due to human exploitative practices, their nature and context does not provide very strong support for this conclusion. Snails may also be eliminated from the food list because they occur almost entirely in plowzone, unit level contexts, and all but one of them are unburned. Additionally, the preservation potential for shell on the site is probably not very high due to the relative alkalinity; therefore, the excellent condition of the snails also argues for their recent incorporation into the deposits.

With respect to processing, one may conclude from the presence of burned bone and features which apparently functioned as hearths or cooking facilities, that at least some of the meat was cooked. Swanton (1979:368) reports that numerous observers documented the disinclination among historic Indians of the Southeastern United States to eat raw meat. While unburned bone is present on the site, it may simply be discarded remains from which the meat was stripped and boiled, dried, roasted or otherwise prepared. Particularly for the larger animals, the predominance of fragments which probably are from long bones and the low incidence of other recognizable elements may lend support to the premise that meat was being brought into the site as flesh or selected portions. These observations may also be indicative of relatively small amounts of meat being brought into the site for consumption. The only other elements which are notable at the site include skull fragments, occipital condyles and two ulnas, one of which was converted into a tool. Since most of the turtle carapace fragments are burned, one may infer that these animals were probably roasted in ways similar to those cited by Swanton (1979:369) in which the plastron is cut off and the animal is roasted "alive and kicking". . . "in its own oven." Another common practice (Swanton 1979:369) was to boil smaller animals "after the woodcock fashion, never taking the guts out." The boiling was prolonged until the entire animal (sometimes with hair and skin included) was virtually liquefied. Such a practice would leave little if any bone to be incorporated into the archaeological record.

Fish were commonly roasted or boiled, often with the bones enclosed within the flesh. The presence of two unburned fish centrums from midden context suggests that the heads may have been cut off before cooking. Other fish remains include possible unburned skull fragments which were incorporated within one of the burials.

The mussel shell occurred in burned form within Feature 40, which also exhibited evidence of in situ burning. The simplest cooking procedure for shellfish is steaming or they can be eaten raw. The incorporation of the shell within this feature suggests that mussels may have been processed here.

Inferring the role of storage, at least for meats, is complicated by equivocal evidence. Although bone remains occur in features which are presumed to represent storage/refuse pits, their volume is low. Bone remains are also represented in every other feature type identified from the site. In general, the storage/refuse pits are neither numerous, deep or densely packed with cultural debris. In fact, the meat storage in pits does not appear to be strongly indicated as a principal function within the general site activities. However, other storage methods may be in use, such as basketry containers, skin bags, or scaffolds. Only the latter are likely to leave archaeological indications in the ground, and these are probably ephemeral.

Finally, the method of disposal remains to be discussed. As mentioned early in this section, the amount of bone from the site is relatively low. It occurs in both general midden and feature contexts. If one accepts the previously stated arguments that many of the smaller vertebrates probably do not represent inclusions in the aboriginal diet, the remaining bone is largely from archaeological features. One may conclude from this distribution that bone disposal is principally taking place either where the meat is being processed (such as in cooking areas) or it is being secondarily deposited. The latter may occur deliberately in refuse pits as a result of hearth cleaning or other means. Another rather remote possibility may be that bone (presumably with meat attached) was included in the burials as grave goods. Finally, the essentially untestable possibility that bone is being discarded off-site must not be dismissed.

Feature Descriptions

by
David Pollack

Introduction

Features are anomalies within a soil matrix, which often occur on archaeological sites as soil discolorations and/or concentrations of cultural material. Because archaeologists view features as the remains of specific past human activities, an examination of feature content and spatial distribution can provide researchers with data relevant to interpreting the range of activities which took place at a site.

This section describes the prehistoric cultural features excavated at Site 40JK27. Fifty-nine features (Table VI-13) were identified at the Hurricane Branch Site. Of this total, 48 were interpreted as prehistoric cultural features, while the remainder were classified as tree, root, or rodent disturbances. In the discussion which follows, features were classified by size, shape, soil color and/or concentration of cultural material. Based on these criteria, eight categories were identified: pits, fired areas, rock concentrations (greater than 1,000 g), rock clusters (less than 1,000 g), charcoal concentrations, bone concentrations, black stains and burials. Pit features were further subdivided into 1) small cylindrical, 2) straight-side and round-bottom, 3) shallow-sloping-side and round-bottom, and 4) rock-lined. Small cylindrical pits were

Table VI-13. Soil Anomaly Designations.

Feature Number	Final Designations	Feature Number	Final Designations
1)	Not assigned	27a)	Pit
2)	Not assigned	27b)	Pit
3)	Infant burial	28)	Fired area
4)	Pit	29)	Pit
5a)	Pit	30)	Black stain
5b)	Pit	31)	Black stain
5c)	Infant burial	32)	Pit
6)	Pit	33)	Pit
7)	Black stain	34)	Charcoal concentration
8)	Black stain	35)	Fired area
9)	Rodent disturbance	36)	Rock concentration
10)	Fired area	37)	Charcoal concentration
11a)	Pit	38)	Fired area
11b)	Pit	39)	Pit
12)	Pit	40)	Rock concentration
13a)	Pit	41)	Not assigned
13b)	Pit	42)	Pit
14)	Pit	43)	Not assigned
15)	Tree disturbance	44)	Pit
16)	Pit	45)	Pit
17)	Pit	46)	Pit
18)	Not assigned	47)	Pit
19)	Rock cluster	48)	Rodent disturbance
20)	Rodent disturbance	49)	Pit
21)	Pit	50)	Pit
23)	Rock cluster	52)	Pit
22)	Bone concentrations	51)	Rock concentration
24)	Pit	53)	Pit
25)	Rodent disturbance	54)	Pit
26)	Rodent disturbance		

subdivided into 1) sloping side and round bottom, 2) sloping side and flat bottom, 3) straight side and round bottom, and 4) straight side and flat bottom.

Methodology

All features date to the Woodland or Mississippian cultural periods and originated in Soil Unit B4, Stratum 2, except for Features 14, 19, 23, 49 and 50. Feature 14, while dating to the Woodland Period, was associated with Soil Unit A2, soil horizon A. Features 19 and 23 affiliate with the Archaic Period and were associated with Soil Unit A2, soil horizon B and Features 49 and 50 date to either the Archaic or Woodland Period and are within Soil Unit A3, soil horizon A. The spatial distribution and analysis of features within the total site context are presented in Chapter VII.

The initial step in the excavation of features at Site 40JK27 was to define whenever possible the horizontal limits of the observed anomaly and to record its exact provenience with reference to adjacent cultural materials. Once this was accomplished, the feature was photographed and a plan view map was drawn. Each feature was then divided along its longest axis and one half was excavated. A profile was drawn to illustrate the vertical shape and depth of the feature and the profiled area was then photographed. The remaining half of the feature was subsequently removed and the completely excavated feature was photographed. Features were provenienced by a north and east grid coordinate located in the center of the feature and referred to as the feature's "center point."

In order to collect more detailed cultural information concerning internal spatial patterning within large cultural anomalies, three features (31, 40 and 51) identified at the Hurricane Branch Site were excavated in a slightly different manner. After these features had been photographed and a plan view map drawn, they where sub-divided and excavated in 50 cm x 50 cm subunits. Cultural materials from these features were provenienced by the north and east coordinates of each subunit.

As previously discussed in this report, a major objective of the Hurricance Branch project was to identify subsistence strategies and specific activity areas utilized by the prehistoric inhabitants of Site 40JK27. In an attempt to recover botanical remains from the site in pursuit of subsistence data, all feature fill was placed in plastic bags and stored for flotation at a later date. While this strategy worked well for most features, it was not always possible or practical to recover all the feature fill from each excavated feature at Site 40JK27. Feature 4 was excavated during the testing phase at the site, prior to the implementation of the total recovery strategy; and therefore, only a sample of its feature fill was saved for flotation. Features 5A, 5B, 6, 27A, 27B, 49 and 50 were partially disturbed by the backhoe during the testing phase at the site. As a result only the intact section of each feature was kept for flotation. Features 7, 8, 30 and 42 were large anomalies whose size made it impractical to recover and store all the fill from each feature. Only a sample of soil matrix was saved from these features.

Feature Data

The discussion which follows is divided into eight sections: pits, fired areas, rock concentrations (greater than 1,000 g), rock clusters (less than 1,000 g), charcoal concentrations, bone concentrations and burials. Provenience and feature content information as well as a feature description is presented for each feature excavated at the Hurricane Branch Site. As previously discussed in Chapter IV, the six digit category number associated with each type of artifact identified within the typology used by researchers at the University of Kentucky, Department of Anthropology, Program for Cultural Resource Assessment is included for materials recovered from each feature. At the end of each of the eight sections, an attempt is made to determine the function of each feature discussed in that section. This discussion concludes with a summary statement about the features excavated at Site 40JK27. The inter-spatial relationship of features identified at the Hurricane Branch Site is presented in Chapter VII.

Pits

Thirty pit features were excavated at Site 40JK27. Of these, 20 (Figure VI-106) were small cylindrical pits, five exhibited straight sides and a round bottom (Features 4, 5A, 42, 49, 50), two features (42, 54) were shallow pits with sloping sides and a round bottom and three (Features 14, 29, 39) were rock-lined.

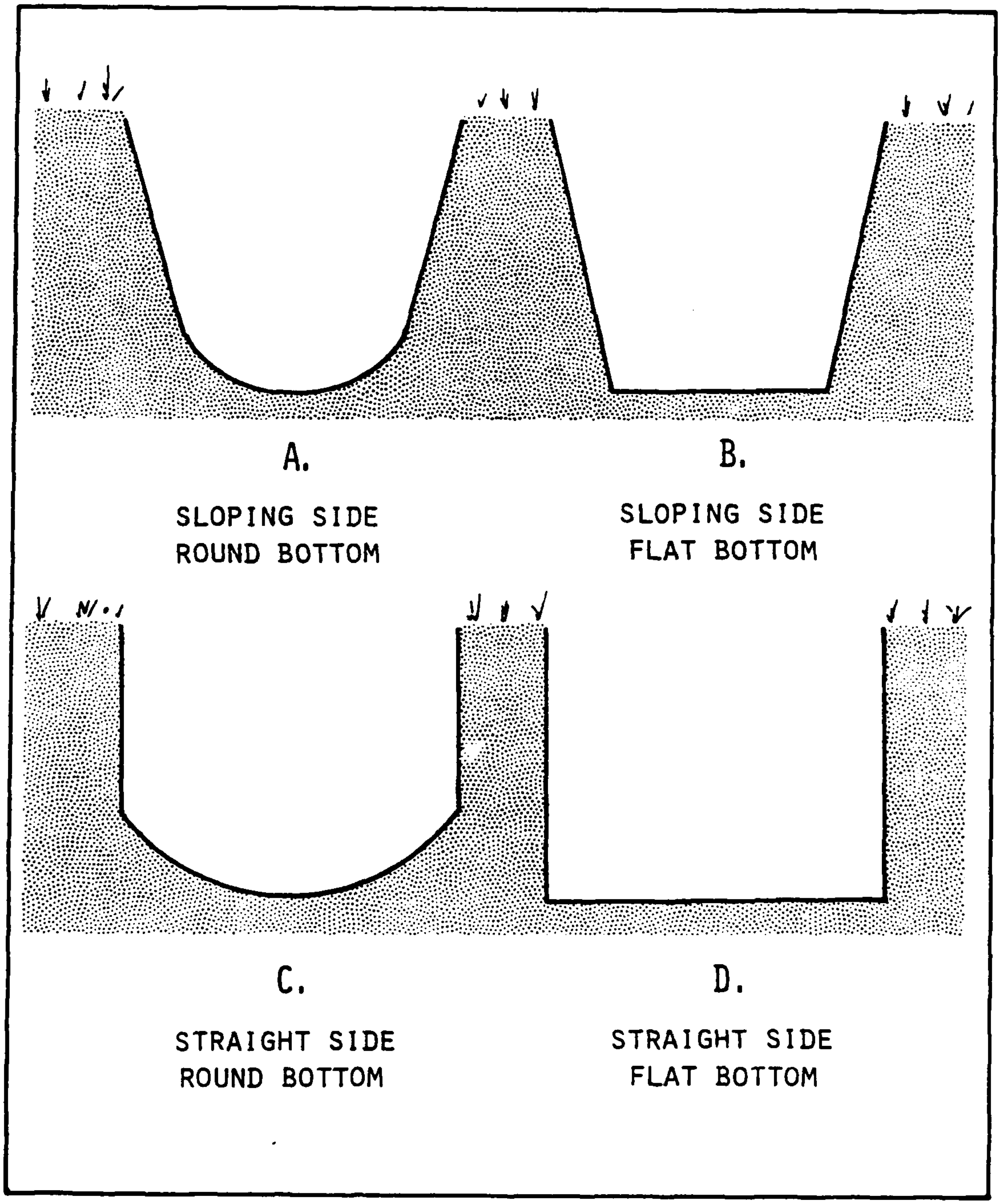


Figure VI-106. Schematic representation of small cylindrical pit types.

Small Cylindrical Pits

Twenty small cylindrical pits were excavated at Site 40JK27 (Table VI-14). These features tended to be circular, ranging in diameter from 15 to 36 cm with a mean of 22 cm and an average thickness of 17 cm. The soil matrix associated with each of the small cylindrical pits ranged from a gray to dark gray silty sand loam. All of these features originated in Soil Unit B4, Stratum 2.

The small cylindrical pits excavated at Site 40JK27 exhibited sloping sides and round bottoms (Figure VI-109), However, one pit (Feature 21) had sloping sides and a flat bottom. Two other pits (Features 46, 47) exhibited straight sides with a round bottom and three pits (Features 6, 11A, 11B) had straight sides with a flat bottom (Figure VI-106).

Feature 24, a cylindrical pit with sloping sides and a round bottom, is of particular interest because it was set in the middle of a shallow, basin-shaped pit, which measured 60 cm north-south x 45 cm east-west and was 10 cm thick. The larger pit was characterized by sloping sides and a round bottom.

Two pairs of pits, features 11a and 11b and Features 27a and 27b, were spatially proximal and thus considered to be functionally related.

CONTENTS:

F*	Art. Cat. No.	
		Feature 5B
1	110100	Chunk
6	110101	Chunk (micro)
1	210100	Unclassified Flake
10	210101	Unclassified Flake (micro)
	999999	Fire-Cracked/Other Rock (11g)
		Feature 6
1	110100	Chunk
16	210100	Unclassified Flake
14	210101	Unclassified Flake (micro)
8	800000	Unanalyzable Ceramics
2	801010	Limestone Tempered Plain
6	000010	Carya sp. (hickory)
5	700000	Unidentified bone
	999999	Fire-Cracked/Other Rock (383 g)
		Feature 11a
1	110100	Chunk
3	110101	Chunk (micro)

Table VI-14. Small Cylindrical Pit Provenience Data.

Feature #	Small Cylindrical Pit Type	Unit	Grid Coordinate	Initial Contact Soil Unit	Initial Contact Level	N-S	E-W	Depth
5B	A	107	N530.97 E463.20	B4 Stratum 2	2	36cm	31cm	17cm
6	D	102	N529.45 E463.75	B4 Stratum 2	2	15cm	16cm	26cm
11A	D	102	N528.41 E463.75	B4 Stratum 2	2	22cm	22cm	23cm
11B	D	102	N528.68 E463.61	B4 Stratum 2	2	24cm	25cm	27cm
12	A	111	N528.44 E464.65	B4 Stratum 2	2	29cm	30cm	10cm
13A	A	107/108	N532.04 E463.47	B4 Stratum 2	2	23cm	24cm	11cm
13B	A	107/108	N531.82 E463.67	B4 Stratum 2	2	23cm	24cm	25cm
16	A	111	N528.47 E465.65	B4 Stratum 2	2	27cm	30cm	25cm
17	A	111	N528.53 E465.25	B4 Stratum 2	2	25cm	23cm	18cm
21	B	113/114/118	N530.00 E466.10	B4 Stratum 2	2	29cm	35cm	14cm
24	A	118	N530.40 E467.55	B4 Stratum 2	3	Pit 60cm	45cm	9cm
						**Pit 24cm	25cm	17cm
27A	A	140	N524.83 E468.66	B4 Stratum 2	3	*22cm	22cm	17cm
27B	A	140	N524.81 E468.89	B4 Stratum 2	3	*23cm	23cm	18cm
32	A	114	N531.84 E464.82	B4 Stratum 2	3	16cm	19cm	11cm
33	A	114	N531.75 E465.77	B4 Stratum 2	3	22cm	28cm	9cm
45	A	139	N529.32 E468.26	B4 Stratum 2	4	21cm	27cm	15cm
46	C	144	N528.20 E490.35	B4 Stratum 2	3	18cm	20cm	15cm
47	C	140	N525.04 E468.46	B4 Stratum 2	3	32cm	23cm	12cm
52	A	134	N527.60 E489.00	B4 Stratum 2	4	20cm	20cm	15cm
53	A	134	N527.74 E489.21	B4 Stratum 2	4	20cm	20cm	9cm

*approximately south half removed by backhoe
**small cylindrical pit

LEGEND

A=Sloping Sides, Round Bottom
B=Sloping Sides, Flat Bottom
C=Straight Sides, Round Bottom
D=Straight Sides, Flat Bottom

3	210100	Unclassified Flake
8	210101	Unclassified Flake (micro)
22	000010	Carya sp. (hickory)
2	000030	Juglandaceae
2	000031	Juglans nigra (black walnut)
	999999	Fire-Cracked/Other Rock (33 g)

Feature 11b

4	210100	Unclassified Flake
5	210101	Unclassified Flake (micro)
	999999	Fire-Cracked/Other Rock (125 g)

Feature 12

6	110101	Chunk (micro)
2	210100	Unclassified Flake
15	210101	Unclassified Flake (micro)
	999999	Fire-Cracked/Other Rock (3 g)

Feature 13a

2	210100	Unclassified Flake
6	210101	Unclassified Flake (micro)
	999999	Fire-Cracked/Other Rock (310 g)

Feature 13B

1	210100	Unclassified Flake
7	210101	Unclassified Flake (micro)
	999999	Fire-Cracked/Other Rock (5 g)

Feature 16

1	110000	Raw Material
2	110101	Chunk (micro)
6	210100	Unclassified Flake
33	210101	Unclassified Flake (micro)
1	412923	Lanceolate 7 (Copena)
88	800000	Unanalyzable
3	801000	Limestone Temper Residual
1	801001	Limestone Temper Unidentified Surface
37	801011	Limestone Temper Plain
32	801030	Limestone Temper Simple Stamp
25	000010	Carya sp. (hickory)
2	000031	Juglans Nigra (black walnut)
	999999	Fire-Cracked/Other Rock (351 g)

Feature 17

1	110101	Chunk (micro)
5	210101	Unclassified Flake (micro)
22	800000	Unanalyzable Ceramics
1	801000	Limestone Tempered Residual

1	801010	Limestone Tempered Plain
1	801022	Limestone Tempered Cordmarked
1	000010	Carya sp. (hickory)

Feature 21

4	110101	Chunk (micro)
6	210100	Unclassified Flake
14	210101	Unclassified Flake (micro)
12	800000	Unanalyzable Ceramics
4	801010	Limestone Tempered Plain
1	801030	Limestone Tempered Simple Stamped
9	000010	Carya sp. (hickory)
1	000030	Juglandaceae
1	000199	Unknown
	999999	Fire-Cracked/Other Rock (31 g)

Feature 24

17	110100	Chunk
32	110101	Chunk (micro)
8	210100	Unclassified Flake
82	210101	Unclassified Flake (micro)
8	800000	Unanalyzable Ceramics
4	801010	Limestone Tempered Plain
1	000010	Carya sp. (hickory)
1	000031	Juglans Nigra (black walnut)
1	000220	Vitis sp. (grape)

Feature 27a

1	110100	Chunk
5	110101	Chunk (micro)
3	210100	Unclassified Flake
	999999	Fire-Cracked/Other Rock (10 g)
7	210101	Unclassified Flake (micro)

Feature 27b

2	110101	Chunk (micro)
4	210100	Unclassified Flake
14	210101	Unclassified Flake (micro)
1	000010	Carya sp. (hickory)
1	000032	Juglans Cinerea (butternut)
	999999	Fire-Cracked/Other Rock (9 g)

Feature 32

8	210101	Unclassified Flake (micro)
	999999	Fire-Cracked/Other Rock (40 g)

Feature 33

1	110100	Chunk
6	210100	Unclassified Flake
28	210101	Unclassified Flake (micro)
1	412647	Side Notched 29
2	810000	Burned Clay
	999999	Fire-Cracked/Other Rock (15 g)

Feature 45

2	110101	Chunk (micro)
6	210100	Unclassified Flake
31	210101	Unclassified Flake (micro)

Feature 46

1	110100	Chunk
2	110101	Chunk (micro)
2	210100	Unclassified Flake
3	210101	Unclassified Flake (micro)
1	444940	Triangular Biface Fragment

Feature 47

8	110101	Chunk (micro)
8	210100	Unclassified Flake
24	210101	Unclassified Flake (micro)
1	445710	Drill Fragment
2	800000	Unanalyzable Ceramics
2	801010	Limestone Tempered Plain
6	000010	Carya sp. (hickory)
2	000030	Juglandaceae
2	000031	Juglans Nigra (black walnut)
4	700000	Unidentified Bone
	999999	Fire-Cracked/Other Rock (108 g)

Feature 52

1	210000	Core
9	210100	Unclassified Flake
27	210101	Unclassified Flake (micro)
6	000010	Carya sp. (hickory)
	999999	Fire-Cracked/Other Rock (120 g)

Feature 53

1	210100	Unclassified Flake
14	210101	Unclassified Flake (micro)
4	000010	Carya sp. (hickory)

* Frequency

Discussion

The size and shape of the small cylindrical that pits identified at the Hurricane Branch Site suggest tney represent the remains of prehistoric postmolds within which a post was set. An examination of the feature profile drawn for each of the excavated small cylindrical pits indicates posts were probably set into the ground at a 90 degree angle.

Feature 24 was the only small cylindrical pit directly associated with a larger pit. Although the small cylindrical pit and the larger basin pit are believed to be related, it is possible that one predates the other. Cobb and Faulkner (1978:66) identified four features at the Owl Hollow Site which they classified as "setting basins with structural support postholes." They suggested that the basins functioned for setting and stablizing the post during initial installation. Although the features Cobb and Faulkner describe are somewhat larger than Feature 24, the shallow basin associated with this small cylindrical pit may have served a similar function.

The size and shape of Feature 16 is typical of the cylindrical pits identified at Site 40JK27. However, a large quantity of limestone plain and simple stamped sherds were recovered from this pit. These sherds are believed to represent the remains of a single vessel, placed within Feature 16. Due to the presence of these sherds this feature is classified as a storage pit.

The occurrence of two pairs of postmolds (Features 11a and 11b and Features 27a and 27b) at the site may indicate rebuilding within a specific area. However, pairs of small cylindrical pits may in some way be related to the specific types of architectural structures used by the prehistoric inhabitants of the Hurricane Branch Site. Unfortunately, no complete data were collected to verify the use of such structures at the site. Thus, at present the function of the sets of paired postmolds are not known.

Limestone tempered plain ceramics were recovered from Features 6, 24 and 47. Plain and cordmarked limestone tempered sherds were found in Feature 17 and plain and simple stamped sherds were recovered from Features 16 and 21. In addition to the ceramics, a Lanceolate 7 (412923) projectile point was recovered from Feature 16 and a Side Notched 27 (412647) projectile point was found in Feature 33. These materials indicate that many of these features date to the Middle Woodland Period.

The spatial distribution of small cylindrical pits identified at the Hurricane Branch Site is presented in Chapter VII.

Straight-Side Round-Bottom Pits

Feature 4

Unit 102
Centerpoint: N529.71 E463.36
Soil Unit A3, Stratum 2
Level 2

DESCRIPTION: This feature was initially exposed in Backhoe Trench XI where a portion of its northern half was removed. However, enough of the feature remained to determine its size and shape. Feature 4 measured 78 cm x 89 cm and was 24 cm thick. This pit was characterized by straight sides and a round bottom. The soil associated with this feature was a dark-brown, silty sand loam. A small cluster of small rocks was exposed in the northwest corner of this feature.

CONTENTS:

F*	Art. Cat. No.	
3	110100	Chunk
98	210100	Unclassified Flake
31	210101	Unclassified Flake (micro)
57	800000	Unanalyzable Ceramics
5	801000	Limestone Tempered Residual
26	801010	Limestone Tempered Plain
2	801030	Limestone Tempered Simple Stamped
7	810000	Burned Clay
1	000010	Carya sp. (hickory)
1	000031	Juglans nigra (black walnut)
3	700000	Unidentified Bone
	999999	Fire-Cracked/Other Rock (360 g)

*Frequency

Feature 5A

Unit 107
Centerpoint: N530.71 E463.55
Soil Unit B4, Stratum 2
Level 2

DESCRIPTION: As with Feature 4, this feature was initially exposed in Backhoe Trench XI. A portion of the southern half of this pit was removed by the backhoe, but enough remained intact to determine its size and shape. It measured 70 cm x 40 cm, was 22 cm thick and exhibited straight sides and a round bottom. The soil associated with this pit was a dark-brown, silty sand loam. A small cluster of small rocks were located in the northeast corner of the feature.

CONTENTS:

F*	Art. Cat. No.	
4	110100	Chunk
27	110101	Chunk (micro)
49	210100	Unclassified Flake
228	210101	Unclassified Flake (micro)
5	800000	Unanalyzable Ceramics
1	801000	Limestone Tempered Residual
3	801010	Limestone Tempered Plain
2	810000	Burned Clay
1	700000	Unidentified Bone
	999999	Fire-Cracked/Other Rock (536 g)

*Frequency

Feature 42

Unit 149
Centerpoint N517.20 E468.80
Soil Unit B4 Stratum 2
Level 5

DESCRIPTION: This feature consisted of a fairly circular pit which measured 110 cm x 90 cm and was 35 cm thick. Feature 42 exhibited straight sides and a round bottom. The soil associated with this feature was a gray silty sand loam.

CONTENTS:

F*	Art. Cat. No.	
1	110000	Raw Material
10	110100	Chunk
19	110101	Chunk (micro)
3	210000	Core
30	210100	Unclassified Flake
94	210101	Unclassified Flake (micro)
1	234941	Triangular Biface (straight base, angular corners)
12	800000	Unanalyzable Ceramics
2	801000	Limestone Tempered Residual
7	801010	Limestone Tempered Plain
1	801030	Limestone Tempered Simple Stamped
1	801050	Limestone Tempered Check Stamped
1	810000	Burned Clay
7	000010	Carya sp. (hickory)
3	000030	Juglandaceae

1	000031	Juglans Nigra (black walnut)
6	700000	Unidentified Bone
	999999	Fire-Cracked/Other Rock (515 g)

*Frequency

Feature 49

Unit Backhoe Trench XX
Centerpoint: N503.03 E507.20
Soil Unit A3, A Soil Horizon
Level Unknown

DESCRIPTION: The northern half of Feature 49 was removed during the excavation of Backhoe Trench XX. The remaining section of this feature measured 36 cm x 71 cm and was 26 cm thick. Feature 49 exhibited straight sides with a round bottom. The soil associated with this feature was a dark-brown, sandy silt loam.

CONTENTS:

F*	Art. Cat. No.	
1	110000	Raw Material
23	110100	Chunk
83	110101	Chunk (micro)
1	210000	Core
91	210100	Unclassified Flake
763	210101	Unclassified Flake (micro)
1	314942	Triangular Biface (straight base, round corners)
1	444940	Triangular Biface Fragment
1	311100	Marginally Modified Flake
1	334915	Ovate Biface (Backed)
1	344900	Biface Fragment (Midsection)
4	600890	Crinoid Fossil
2	000031	Juglans Nigra (Black Walnut)
2	000099	Unidentified Nut
1	000220	Vitis sp. (grape)
1	000431	Iva Annua
5	700000	Unidentified Bone
	999999	Fire-Cracked/Other Rock (875 g)

*Frequency

Feature 50

Unit Backhoe Trench XX
Centerpoint: N502.94 E512.83
Soil Unit A3, Soil Horizon A
Level Unknown

DESCRIPTION: As with Feature 49, the northern half of this pit was removed during the excavation of Backhoe Trench XX. The remaining section measured 40 cm x 62 cm with a thickness of 19 cm. Feature 50 exhibited straight sides with a round bottom. The soil associated with this feature was a dark-brown, sandy silt loam. A black organic layer was observed near the bottom of the pit (Figure VI-107). However, this layer was not as distinct as the charcoal in Features 29 and 39, and it was not covered by a layer of rocks.

CONTENTS:

F*	Art. Cat. No.	
9	110100	Chunk
57	110101	Chunk (micro)
30	210100	Unclassified Flake
423	210101	Unclassified Flake (micro)
4	000010	Carya sp. (hickory)
2	000030	Juglandaceae
1	000031	Juglans Nigra (black walnut)
1	000039	Jugans sp.
	999999	Fire-Cracked/Other Rock (439 g)

*Frequency

Discussion

The shape and size of Features 4, 5A, 42, 49 and 50 suggest that they functioned as storage or refuse pits. The presence of small amounts of botanical remains in these features also support their use as storage pits. Nut charcoal was recovered from three of the features (4, 42 and 50) and two burned seeds (grape, iva) were recovered from Feature 49. Floral material was not recovered from Feature 5A. Little or no faunal material was found in these features.

However, it is noteworthy that the presence of carbonized nuts and seeds in these features may be the result of post-storage activities which might have resulted in secondary deposition of botanical refuse. The absence of large quantities of botanical or faunal remains from storage pits would appear to indicate that food processed at the Hurricane Branch Site was either consumed at the site or transported to another locality for consumption at a later date.

The Iva recovered from Feature 49 represents the only occurrence of this plant at the site. This seed is smaller than those usually found on Woodland sites in Tennessee and may be associated with the Archaic occupation of Site 40JK27. Feature 49 is also of interest because a large

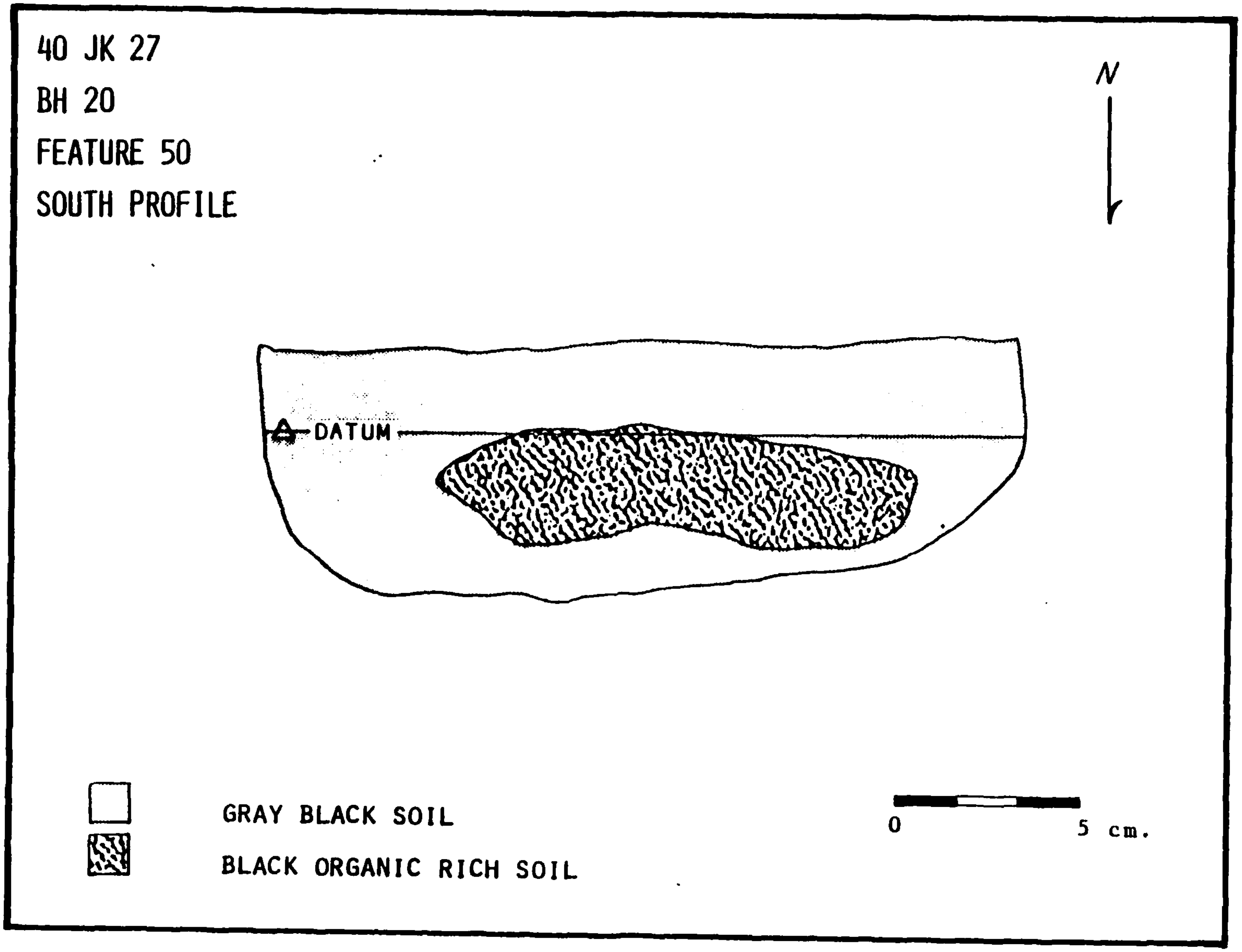


Figure VI-107. Feature 50.

amount of debitage, including four biface fragments, found within it. Aside from the black stain features (7, 8, 30, 31) discussed later in this section, Feature 49 is one of the few features which yielded a substantial quantity of lithic material.

Feature 50 is also of interest because it was one of the few large pits which was internally stratified. However, the layer of charcoal near the bottom of this pit was not as dense as that found in either Feature 29 or 39.

No projectile points were recovered from Features 4, 5A, 42, 49 or 50. Ceramics, however, were recovered from Features 4, 5A and 42. Limestone tempered plain sherds were recovered from Feature 5A and indicate a Woodland affiliation for this feature. From Features 4 and 42, limestone tempered plain and simple stamped sherds were recovered, which as discussed in the ceramics section of Chapter VI, suggest an early Middle Woodland affiliation for these features.

Ceramics were not recovered from Features 49 and 50. The absence of ceramics from these features and the presence of iva in Feature 49 suggest that these features may be associated with an undetermined preceramic occupation of the Hurricane Branch Site.

Shallow, Sloping-Sides Round-Bottom Pits

Feature 44

Unit 138/140
Centerpoint: N526.32 E468.23
Soil Unit B4, Stratum 2
Level 4

DESCRIPTION: This feature was identified as a shallow oblong shaped pit. It measured 123 cm x 43 cm and was 8 cm thick. Feature 44 exhibited sloping sides and a round bottom. The soil associated with Feature 44 was a gray, silty sand loam.

CONTENTS:

F*	Art. Cat. No.	
3	110100	Chunk
7	110101	Chunk (micro)
7	210100	Unclassified Flake
32	210101	Unclassified Flake (micro)
1	800000	Unanalyzable Ceramics
1	801010	Limestone Tempered Plain
1	801000	Limestone Tempered Residual
13	000010	Carya sp. (hickory)

25	000030	Juglandaceae
4	000032	Juglans Cinerea (butternut)
	999999	Fire-Cracked/Other Rock (4 g)

*Frequency

Feature 54

Unit 157
Centerpoint: N512.20 E464.60
Soil Unit B4, Stratum 2
Level 4

DESCRIPTION: This feature was a shallow pit exposed at the base of the midden. The southern portion of Feature 54 was disturbed during the excavation of Unit 150 before this anomaly was classified as a feature. Feature 54 measured 55 cm x 56 cm and was 8 cm thick. This feature exhibited sloping sides with a round bottom. The soil associated with Feature 54 was a gray-brown, silty sand loam.

CONTENTS:

F*	Art. Cat. No.	
2	110101	Chunk (micro)
3	210100	Unclassified Flake
5	210101	Unclassified Flake (micro)
35	000010	Carya sp. (hickory)
2	000199	Unknown
1	000451	Zea Mays Kernel
36	700000	Unidentified Bone
1	700003	Deer Ulna
1	700004	Deer Skull fragment
1	700009	Deer Occoypital condyle
	999999	Fire-Cracked/Other Rock (595 g)

*Frequency

Discussion

The function of Feature 44 could not be determined. Limestone tempered plain ceramics were recovered from this feature and indicate a Woodland affiliation.

Feature 54 may have been a storage pit, but its shallow basin shape probably would not have provided sufficient storage space. Burned deer bone, hickory nut and one corn kernel fragment recovered from Feature 54 suggest it may have functioned as a food roasting pit. However, the pit was not lined with rocks, the soil was not fired and the faunal and floral materials recovered from this feature may in fact be secondarily deposited refuse.

No projectile points and ceramics were recovered from Feature 54 and a cultural affiliation could not be assigned.

Rock-lined Pits

Feature 14

Unit 115
Centerpoint: N588.00 E516.2
Soil Unit A2, Soil Horizon A
Level 2

DESCRIPTION: Feature 14 is a shallow rock-lined pit which was encountered at the base of the plowzone. It measured 60 cm x 70 cm and was 17 cm thick. The soil matrix associated with this feature was a dark-brown, silt loam which was darkest near the center of the feature. Though the rocks from within this feature exhibited evidence of burning, the soil surrounding them was not burned red and only a light random scatter of charcoal was contained within the feature fill.

CONTENTS:

F*	Art. Cat. No.	
16	110100	Chunk
33	110101	Chunk (micro)
108	210100	Unclassified Flake
188	210101	Unclassified Flake (micro)
1	600890	Crinoid Fossil
2	800000	Unanalyzable Ceramics
2	801010	Limestone Tempered Plain
8	000010	Carya sp. (hickory)
2	000031	Juglans nigra (black walnut)
	999999	Fire-Cracked/Other Rock (8,043 g)

*Frequency

Feature 29

Unit 128
Centerpoint: N527.15 E482.10
Soil Unit B4, Stratum 2
Level 4

DESCRIPTION: Feature 29 was a straight-sided pit with a rounded bottom which measured 48 cm x 46 cm and was 30 cm thick. A lens of wood charcoal was exposed at the bottom of this pit. Small limestone rocks covered the charcoal. Feature fill above the rocks was a gray-brown, silty sand pa loam which contained an abundance of small bone fragments. The side walls of Feature 29 were fired red which suggests prolonged or intensive use of fire in association with this pit (Figure VI- 108).

CONTENTS:

F*	Art. Cat. No.	
11	110100	Chunk
40	110101	Chunk (micro)
118	210100	Unclassified Flake
516	210101	Unclassified Flake (micro)
2	800000	Unanalyzable Ceramics
2	801000	Limestone Tempered Residual
9	801010	Limestone Tempered Plain
1	801030	Limestone Tempered Simple Stamped
79	810000	Burned Clay
4	820000	Daub
111	000010	Carya sp. (hickory)
2	000030	Juglandaceae
1	000031	Juglans Nigra (Black Walnut)
1	000220	Vitis sp. (grape)
88	700000	Unidentified Bone
1	700014	Amphibian
	999999	Fire-Cracked/Other Rock (5,319 g)

*Frequency

Feature 39

Unit 148
Centerpoint: N514.80 E466.56
Soil Unit B4, Stratum 2
Level 4

DESCRIPTION: This feature was a shallow basin-shaped pit which measured 103 cm x 100 cm and was 15 cm thick. The soil matrix associated with this feature was a gray-brown, silty sand loam.

A layer of wood charcoal, which was densest in the southeast half of the feature, was exposed and excavated at the base of the pit. The orientation, shape and structure of the separate pieces of wood charcoal contained within Feature 39 suggest that two or three logs had been laid down parallel to each other at the bottom of the pit. The soil below the charcoal was not fired red, and exhibited no other evidence of burning.

Large limestone slabs were recovered from Feature 39. Many of these rocks appeared to have lined the side of the pit. Additional rocks were recovered from within the feature.

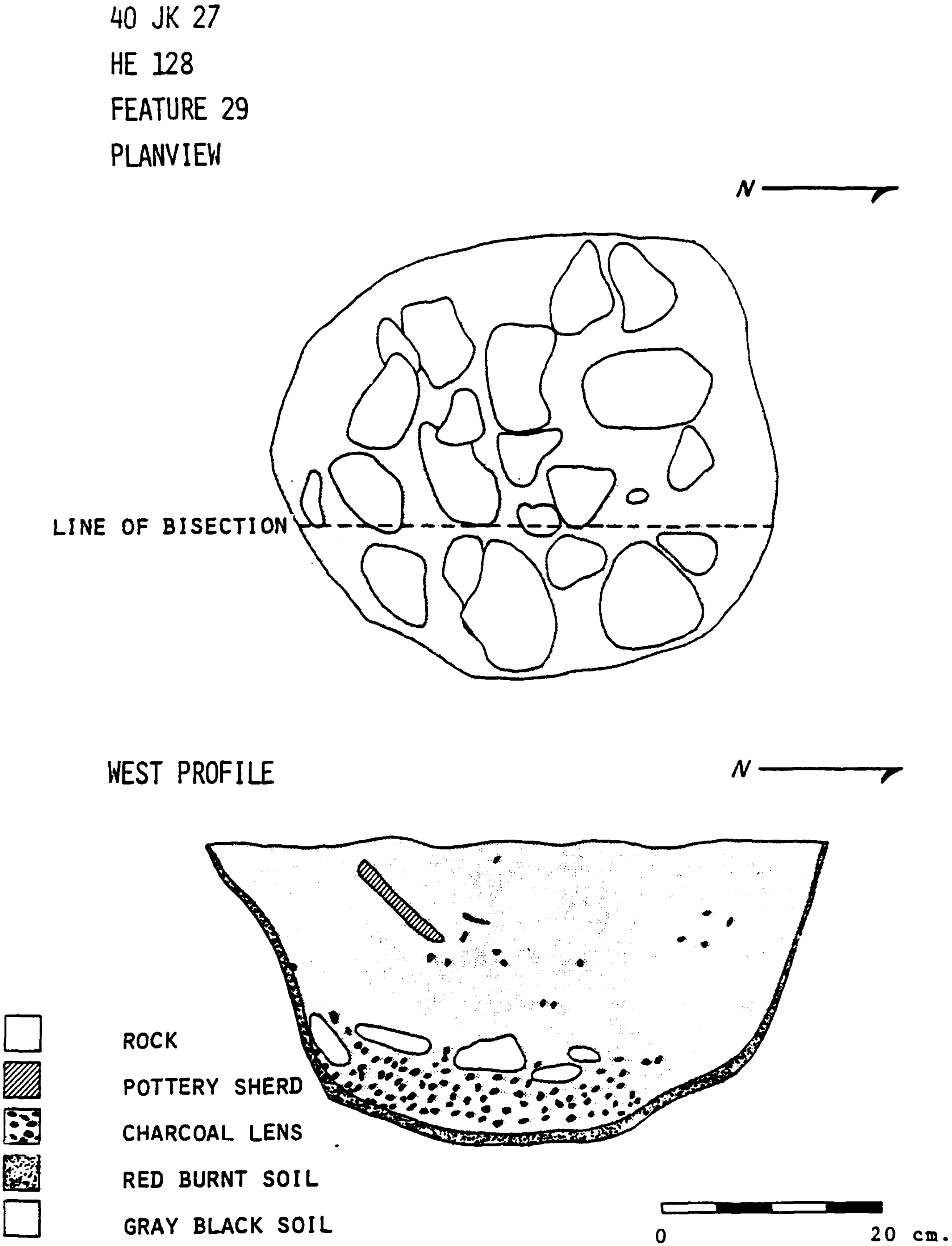


Figure VI- 108. Feature 29.

CONTENTS:

F*	Art. Cat. No.	
2	110100	Chunk
11	110101	Chunk (micro)
11	210100	Unclassified Flake
57	210101	Unclassified Flake (micro)
7	800000	Unanalyzable Ceramics
3	801030	Limestone Tempered Simple Stamped
62	000010	Carya sp. (hickory)
4	000030	Juglandaceae
2	000031	Juglans Nigra (black walnut)
5	000032	Juglans Cinerea (butternut)
1	000399	Unidentified Wild Seed
20	700000	Unidentified Bone
1	700001	Unidentified Phalange
	999999	Fire-Cracked/Other Rock (23,290 g)

*Frequency

Discussion

Feature 14 lacked the concentrated layer of wood charcoal associated with Features 29 and 39. While a detailed analysis of the types of rocks from these features was not undertaken, the rocks from Feature 14 appeared to be primarily sandstone, while those from Features 29 and 39 were limestone. The small amount of eco-factual material, in the form of carbonized hickory and walnut, and the absence of carbonized wood and/or seeds from the pit prohibits one from assigning a specific function to Feature 14.

Carbonized nut from Features 29 and 39 include hickory, black walnut and butternut. A carbonized grape seed was found in Feature 29 and an unidentified carbonized seed was recovered from Feature 39. Small bone fragments were recovered from both features. Most of the bone was burned and unfortunately could not be identified. The carbonized nut and the presence of large quantities of wood charcoal lining the bottom of both features suggests that they may have functioned as plant roasting or cooking pits.

Though the sides of Feature 29 were fired red, the soil matrix associated with Feature 39 exhibited no evidence of burning. This may be due to the soil associated with Feature 29 having a higher clay content than the soil in the vicinity of Feature 39. It could also be due in part to the fact that Feature 39 was a shallow basin which diffused the heat, and thus never allowed the heat to become too concentrated in one place. An alternative explanation suggests that the logs may have been burned prior to their deposition within Feature 39.

Limestone tempered plain ceramics were recovered from Feature 14, limestone simple stamped ceramics were found in Feature 39, and both types were recovered from Feature 29. These ceramics indicate these features date to the Middle Woodland Period.

Fired Areas

Four fired areas were recorded at Site 40JK27. These features are discussed below.

Feature 10

Unit 107
Centerpoint: N531.00 E465.32
Soil Unit B4, Stratum 2
Level 2

DESCRIPTION: Previous plowing at the site had removed the upper portion of Feature 10; the intact portion was 8 cm thick. Feature 10 had a diameter of 1 m and exhibited a shallow basin shape. The red staining within this feature diminished in intensity from the center toward the outer edges. The soil associated with this feature was a reddish brown silty sand loam mottled with dark brown soil.

CONTENTS:

F*	Art. Cat. No.	
11	110100	Chunk
54	110101	Chunk (micro)
13	210100	Unclassified Flake
90	210101	Unclassified Flake (micro)
9	800000	Unanalyzable Ceramics
1	000360	Type 10 Unknown Seed
7	700000	Unidentified Bone
	999999	Fire-Cracked/Other Rock (118 g)

*Frequency

Feature 28

Unit 131
Centerpoint: N517.31 E470.33
Soil Unit B4, Stratum 2
Level 4

DESCRIPTION: This feature measured 80 cm x 65 cm and was 24 cm thick. Feature 28 may have had a pit shape at one time. However, the nature of the deposits within this feature appears to have obscured the boundary between the feature and the surrounding soil matrix. The upper portion of Feature 28 exhibited pockets of red stained earth (fired areas) within a gray-brown, silty sand loam, while the lower portion was a tan silty sand loam. When the burned area had been excavated, the feature exhibited a convoluted surface (Figure VI-109). Below the pockets of fired earth and tan soil was a light red, compact zone which defined the bottom of the feature.

Figure VI-109. Feature 28.

CONTENTS:

F*	Art. Cat. No.	
15	110101	Chunk (micro)
16	210100	Unclassified Flake
100	210101	Unclassified Flake (micro)
1	800000	Unanalyzable Ceramics
2	801011	Limestone Tempered Plain
8	000010	Carya sp. (hickory)
1	000030	Juglandaceae

*Frequency

Feature 35

Unit 139
Centerpoint: N528.50, E469.70
Soil Unit B4, Stratum 2
Level 3

DESCRIPTION: Feature 35 measured 102 cm x 93 cm and was 22 cm thick. This feature may have had a pit shape at one time. However, the nature of the deposits made it difficult to define the outer boundaries between the feature and the surrounding soil matrix. This feature was similar to Feature 28 in that it too exhibited pockets of red soil. The pockets of fired red soil in Feature 35 were associated with a light, gray-brown, silty sand loam. Two areas of fine light gray ashy soil (one located in the center of the feature, the other at the bottom) were also observed.

CONTENTS:

F*	Art. Cat. No.	
4	110100	Chunk
31	110101	Chunk (micro)
67	210100	Unclassified Flake
312	210101	Unclassified Flake (micro)
9	800000	Unanalyzable Ceramics
3	801010	Limestone Tempered Plain
3	810000	Burned Clay
7	000010	Carya sp. (hickory)
3	000030	Juglandaceae
5	000031	Juglans Nigra (black walnut)
7	000032	Juglans Cinerea (butternut)
1	000210	Chenopodium sp. (goosefoot)
4	000300	Rhus sp. (sumac)
4	000350	Unknown Wild Seed
7	700000	Unidentified Bones
	999999	Fire-Cracked/Other Rock (75 g)

*Frequency

Feature 38

Unit 133/149
Centerpoint: N516.50 E467.85
Soil Unit B4, Stratum 2
Level 2

DESCRIPTION: Feature 38 was similar to both Features 28 and 35 in that it exhibited pockets of fired earth within a gray-brown midden matrix. However, it was somewhat smaller (measuring 35 cm x 45 cm) and much shallower (5 cm compared to 24 cm and 22 cm respectively) than the previously discussed fired areas. Feature 38 does not appear to have been associated with a pit.

CONTENTS:

F*	Art. Cat. No.	
4	210101	Unclassified Flake (micro)
1	800000	Unanalyzable Ceramics
10	000030	Juglandaceae
2	000032	Juglans Cinerea (butternut)

*Frequency

Discussion

Feature 10 exhibited a homogenous matrix with the intensity of red stains decreasing from the center to the perimeter of the feature. This feature does not appear to have been associated with a pit and it is possible that Feature 10 represents the remains of a prehistoric surface hearth.

Unlike Feature 10, the other fired areas (Features 28, 35, and 38) exhibited "pockets" of fired earth within a light gray or tan soil matrix. These features exhibited a paucity of cultural material in the form of lithics, ceramics or rock. Small quantities of nut charcoal were recovered from Features 28, 35 and 38. Feature 35, however, yielded nine burned seeds: one chenopodium, four sumac and four unknown wild seeds. The presence of these seeds and the variety of nut charcoal from Feature 35 suggest that it may have had a function related in some manner to food processing at the site. A specific function cannot be assigned to Features 28 and 38. However, the burned earth from these features indicates that they were associated with activities which required sufficient heat to burn the surrounding soil, turning it a distinctive red color.

It should be noted that the pockets of fired earth and the scant of cultural materials from Features 28, 35 and 38 suggests these areas were cleaned out after the earth within each feature had been fired red.

The presence of small amounts of unanalyzable ceramics in Features 10 and 38 indicates that these features date to the Woodland or Mississippian periods. Limestone tempered plain sherds were recovered from Features 28 and 35 which suggests a Woodland affiliation for them.

Rock Concentrations

Three of the features (36, 40, 51) excavated at Site 40JK27 were classified as rock concentrations (greater than 1,000 g). These features are discussed below.

Feature 36

Units 125/134
Centerpoint: N527.00 E488.00
Soil Unit B4, Stratum 2
Level 2

DESCRIPTION: Feature 36 was a concentration of small, predominately limestone rocks. This feature measured 60 cm x 60 cm with a thickness of 20 cm. Feature 36 does not appear to have been associated with a pit. The soil associated with Feature 36 was a dark-brown silty sand loam, which was identical to the surrounding midden matrix.

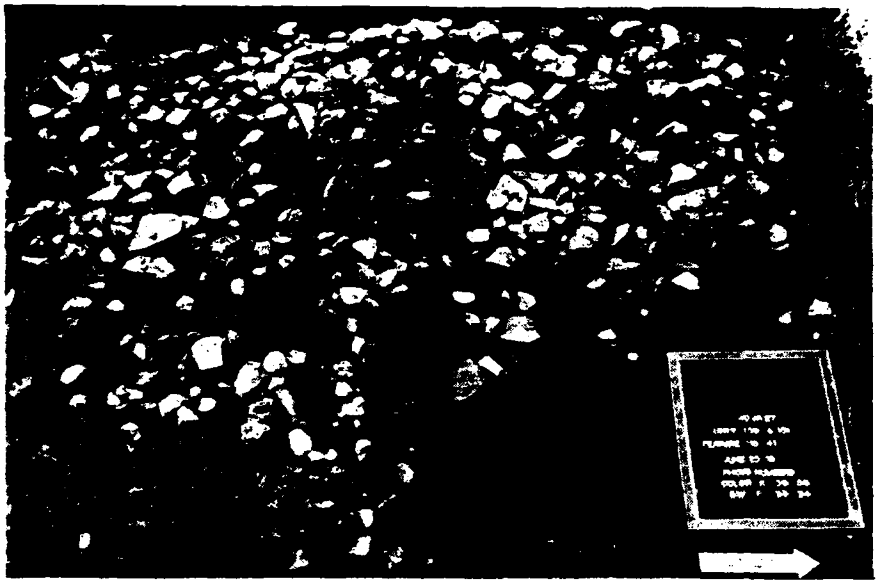
CONTENTS:

F*	Art. Cat. No.	
17	110100	Chunk
42	110101	Chunk (micro)
2	210000	Core
1	220000	Core (aborted)
91	210100	Unclassified Flake
388	210101	Unclassified Flake (micro)
1	444940	Triangular Biface Fragment
7	800000	Unanalyzable Ceramics
3	801010	Limestone Tempered Plain
1	801000	Limestone Tempered Residual
1	801030	Limestone Tempered Simple Stamped
2	810000	Burned Clay
24	000010	Carya sp. (hickory)
10	000031	Juglans Nigra (black walnut)
12	700000	Unidentified Bone
1	700015	Turtle carapace
	999999	Fire-Cracked/Other Rock (4,846 g)

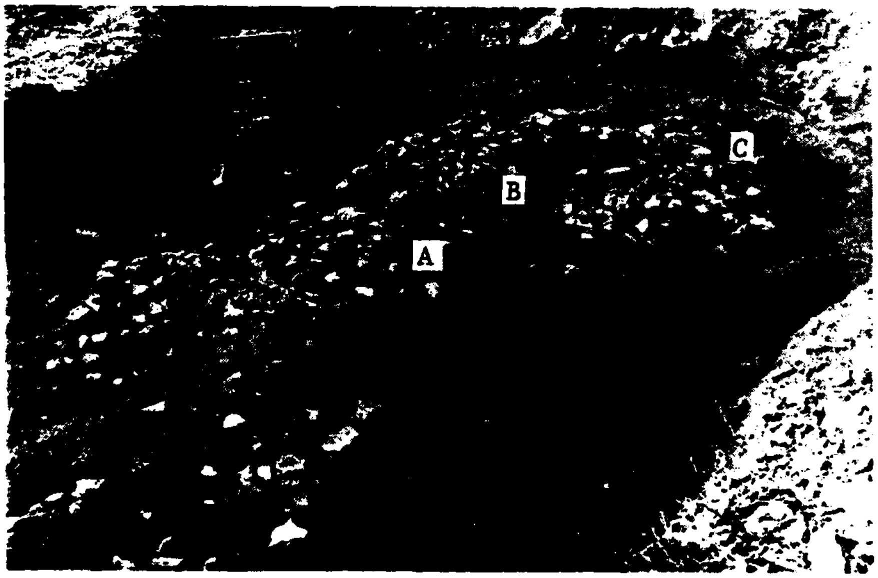
*Frequency

Feature 40

Unit 150/151
Centerpoint: N511.00 E462.50
Soil Unit B4, Stratum 2
Level 2



A



B

Figure VI-110. Photographs of A. Feature 40, and B. Feature 51.

DESCRIPTION: This feature exhibited a roughly circular shape, measuring 240 cm x 200 cm with an average thickness of 15 cm. When the feature was completely exposed, it had a ring-like appearance (Figure VI-110) with the inner portion of the feature having less rock than the outer section. Feature 40 sloped to the east and in profile resembled a shallow basin-shaped pit.

As with Features 36 and 51, the rocks associated with this feature were small and predominately limestone. The soil associated within the northern two thirds of Feature 40 was a black, silty sand loam which contained an abundance of carbonized wood and nut charcoal, while the southern one-third was gray-brown in color and similar to the surrounding midden matrix. A small burned area near the northwest corner is the only evidence of fired earth associated with Feature 40.

CONTENTS:

F*	Art. Cat. No.	
46	110100	Chunk
52	110101	Chunk (micro)
1	210000	Core
82	210100	Unclassified Flake
347	210101	Unclassified Flake (micro)
34	600889	Fossil
19	800000	Unanalyzable Ceramics
5	801000	Limestone Tempered Residual
16	801010	Limestone Tempered Plain
2	801030	Limestone Tempered Simple Stamped
3	801050	Limestone Tempered Check Stamped
1	801060	Limestone Tempered Net Impressed
1	820000	Daub
2030	000010	Carya sp. (hickory)
111	000030	Juglandaceae
63	000031	Juglans Nigra (black walnut)
29	000032	Juglans Cinerea (butternut)
1	000039	Juglans sp.
9	000050	Corylus sp. (hazelnut)
1	000070	Quercus sp. (oak)
1	000090	Unknown Nut
9	000099	Unidentified Nut
1	000199	Unknown
10	000210	Chenopodium sp. (goosefoot)
2	000220	Vitis sp. (grape)
1	000230	Amaranthus sp.
1	000350	Unknown Wild Seed
1	000451	Zea Mays Kernel
1	000466	Cucurbita Rind
392	700000	Unidentified Bone
4	700002	Unidentified teeth
15	700003	Deer Ulna

1	700006	Possible Deer Bone
1	700010	Deer Ulna Awl
2	700011	Small Mammal
1		Mussel Shell
1	700013	Small Mammal Atlas
25	700014	Amphibian
8	700020	Reptile Vertebrae
	999999	Fire-Cracked/Other Rock (94,903 g)

*Frequency

Feature 51

Units 151/153/154/155
Centerpoint: N510.00 E461.00
Soil Unit B4, Stratum 2
Level 3

DESCRIPTION: This feature consisted of three separate concentrations of small, predominately limestone rock which were designated Area A, B and C respectively (Figure VI-111). Feature 51A measured 45 cm x 45 cm. Feature 51B, situated southwest of Feature 51A, measured 50 cm x 50 cm. Feature 51C was situated north of Feature 51A and measured 65 cm x 60 cm. The average thickness of the three areas was 16 cm. Feature 51 did not appear to be associated with a pit and the soil associated with this feature was a gray-brown, silty loam which was similar to the surrounding midden matrix.

CONTENTS:

F*	Art. Cat. No.	
9	110100	Chunk
55	110101	Chunk (micro)
7	210100	Unclassified Flake
44	210101	Unclassified Flake (micro)
7	800000	Unanalyzable Ceramics
4	801000	Limestone Tempered Residual
2	801010	Limestone Tempered Plain
1	801030	Limestone Tempered Simple Stamped
1	810000	Burned Clay
57	000010	Carya sp. (hickory)
10	000030	Juglandaceae
12	000031	Juglans Nigra (black walnut)
3	000032	Juglans Cinerea (butternut)
44	700000	Unidentified Bone
1	700019	Bird
	999999	Fire-Cracked/Other Rock (46,179 g)

*Frequency

Discussion

Features 36 and 51 appear to represent concentrations of limestone rock. But while Feature 36 represents a single concentration, Feature 51 represents three distinct concentrations situated in close proximity to each other. The distinguishing characteristics of these two features are the quantity and size of the rocks and their associated soil matrix. Rocks recovered from both features were primarily small, and appear to have been burned. The size of the rocks suggests they had been repeatedly used and as a result of heating, broken into small fragments. Soils associated with both features were similar to that of the surrounding midden in texture and color and neither feature was associated with a pit.

Features 36 and 51 may represent rocks discarded from hearths or roasting pits. An alternative interpretation is that the piles of limestone rock fragments represent materials which were being stockpiled for future use at the site. Why the inhabitants of Site 40JK27 would have curated and re-used small limestone rocks at the site is not yet known; however, it might be suggested that these rocks could have been used to line pits or were placed within features similar to Feature 40 which is discussed below.

Feature 40 exhibited a more definable pattern than Features 36 and 51. As previously mentioned, Feature 40 was a ring-like shaped concentration of small limestone rocks within a shallow basin. The center of this feature contains less rock than observed on the outer edges. How this relates to the function of Feature 40 is not presently known. The ring may have been formed by the discarding of rocks after use or it may have bounded the activity which took place primarily in the center of the feature. The soil associated with Feature 40 was black and organically rich.

The concentration of burned limestone and charcoal observed in Feature 40 appears to be similar to the basal layer of the earth oven features from the Middle Woodland Owl Hollow Site in south-central Tennessee (Cobb and Faulkner 1978). Although the Owl Hollow earth oven features exhibited a basal layer containing rock and charcoal, they were also characterized as deep hemispherical pits with complex internal stratigraphy and the basal layer being overlain by alternating dark and light soils, with the dark soil containing ash and an abundance of artifactual material. The sides and floors of Owl Hollow earth ovens tend to be fired red. In contrast to the earth ovens excavated at the Owl Hollow site, Feature 40 was a shallow basin which lacked internal stratigraphy and the soil matrix associated with this feature exhibited no evidence of burning.

An abundance of floral material in the form of burned wood, seeds, and nuts were recovered from Feature 40. Amaranthus, chenopodium and grape seeds were found in the feature fill. Maize and squash remains as well as arboreal seeds, (including hickory, black walnut and butternut) were also recovered from Feature 40.

Faunal material such as mussel shells, a deer ulna awl, small mammal bone fragments, and reptile and amphibian bone fragments were recovered from Feature 40. Though some of the bone was burned, the majority of the faunal material from Feature 40 had not been burned.

The floral and faunal material from Feature 40 indicates that the inhabitants of the Hurricane Branch Site exploited a variety of food resources. However, the concentration of floral material, the minimal amount of faunal material from the feature, and its shallow basin shape suggest a plant processing or cooking function for Feature 40.

No projectile points were recovered from Features 36, 40 and 51. However, the presence of limestone tempered plain and simple stamped ceramics in these features suggests an early Middle Woodland affiliation for Features 36, 40 and 51.

Rock Clusters

Two features (19, 23) were designated rock clusters. These features consisted of only a few rocks (less than six) which weighed less than 1,000 g.

Feature 19

Unit 121
Centerpoint: N588.25 E517.25
Soil Unit A2, Soil Horizon B
Level 3

DESCRIPTION: This feature consisted of a small cluster of rocks. Feature 19 measured 25 cm x 17 cm and was 10 cm thick. The soil associated with Feature 19 was a compact, yellowish-brown, silt loam which was similar to the surrounding midden matrix.

CONTENTS:

F*	Art. Cat. No.	
7	110100	Chunk
28	110101	Chunk (micro)

20	210100	Unclassified Flake
145	210101	Unclassified Flake (micro)
	999999	Fire-Cracked Rock (174 g)

*Frequency

Feature 23

Unit 115
Centerpoint: N586.29 E517.72
Soil Unit A2, Soil Horizon B
Level 4

DESCRIPTION: This feature consisted of a small cluster of rocks measuring 23 cm x 29 cm with a thickness of 10 cm. The soil associated with this feature was a compact, yellowish-brown, silt loam which was similar to the surrounding midden matrix.

CONTENTS:

F*	Art. Cat. No.	
4	110100	Chunk
16	110101	Chunk (micro)
1	210000	Core
14	210100	Unclassified Flake
170	210101	Unclassified Flake (micro)
1	442300	Expanded Stem (Unidentified)
1	600005	Pitted Stone (large)
3	000010	Carya sp. (hickory)
	800000	Unanalyzable Ceramics
	999999	Fire-Cracked Rock (856 g)

*Frequency

Discussion

Features 19 and 23 represent small clusters of rock, the function of which has yet to be determined. These features are associated with a yellow-brown, compact silt loam. Although they are believed to be associated with Archaic deposits, ceramic sherds (too small to be analyzed) were found in the flotation samples from Feature 23. These sherds suggest a possible Woodland or Mississippian affiliation for Feature 23. However, it seems likely that these sherds were intrusions from the midden above.

Charcoal Concentration

Two features (34 and 37) excavated at the Hurricane Branch Site were classified as charcoal concentrations. These features are discussed below.

Feature 34

Unit 12*
Centerpoint: N526.50 E479.82
Soil Unit B4, Stratum 2
Level 2

DESCRIPTION: This feature exhibited an oblong shape, measuring 140 cm x 40 cm with an average thickness of 8 cm (Figure VI-111). The edges of this feature were difficult to define, as there was not a clear border between the concentration of charcoal and the surrounding midden. The soil matrix associated with Feature 34 consisted of a compact dark-brown, silty sand loam mottled with a yellow-brown silty sand loam and charcoal flecks.

CONTENTS:

F*	Art. Cat. No.	
4	110100	Chunk
21	110101	Chunk (micro)
27	210100	Unclassified Flake
209	210101	Unclassified Flake (micro)
9	800000	Unanalyzable Ceramics
1	801000	Limestone Tempered Residual
2	801010	Limestone Tempered Plain
72	000010	Carya sp. (hickory)
1	000070	Quercus sp. (oak)
78	000199	Unknown Botanical Remains
1	000451	Zea Mays Kernel

*Frequency

Feature 37

Unit 143/144
Centerpoint: N528.40 E480.80
Soil Unit B4, Stratum 2
Level 2

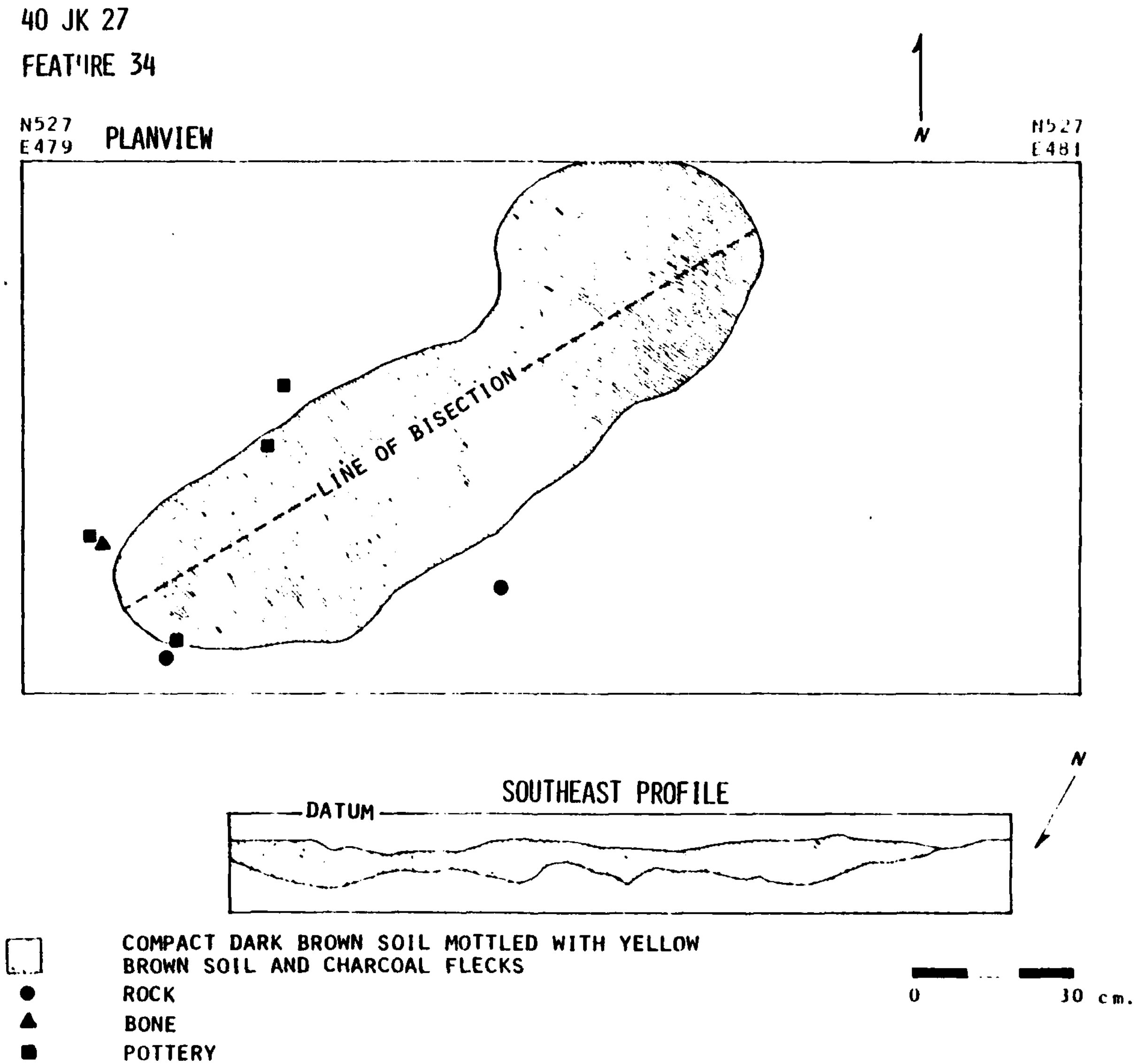


Figure VI-111. Feature 34.

DESCRIPTION: This feature was a circular shallow basin exposed at the base of the plowzone. Feature 37 measured 73 cm x 69 cm with a thickness of 10 cm. It exhibited sloping sides with a round bottom and was associated with a dark-brown compact, silty sand loam mottled with numerous charcoal flecks.

CONTENTS:

F*	Art. Cat. No.	
5	110100	Chunk
34	110101	Chunk (micro)
32	210100	Unclassified Flake
236	210101	Unclassified Flake (micro)
1	600890	Crinoid Fossil
1	801010	Limestone Tempered Plain
20	000010	Carya sp. (hickory)
12	000031	Juglans Nigra (black walnut)
4	000199	Unknown
4	000220	Vitis sp. (grape)
5	700000	Unidentified Bone
	999999	Fire-Cracked Rock (40 g)

*Frequency

Discussion

Feature 37 was located within Feature 31 (a black stain feature, see later discussion) and may have been a shallow pit at the base of the plowzone. If this was the case, then the upper portion may have been removed by plowing at the site. However, it is also possible that Feature 37 represents a darker area within a larger concentration of charcoal, and that Features 37 and 31 are in fact one feature. The latter seems to be more plausible because both features exhibit a similar soil matrix, were exposed directly below the plowzone and were of equal depth. Although the function of this feature cannot be determined at this time, the activities which produced Feature 37 are probably related to those which produced Feature 31. The presence of burned hickory, black walnut and grape seeds from Feature 37 and from Feature 31 tend to support this association. The function of Feature 37 was probably related to food processing activities.

The irregular shape of Feature 34 makes it difficult to interpret. However, Feature 34 was classified as a cultural feature for the following reasons: 1) the soil matrix was more compact than the surrounding midden deposits and was not loose as one would expect if Feature 34 represented a recent disturbance and 2) the recovery of floral material such as burned hickory nut and burned corn suggests this feature was related to subsistence activities at the site.

Botanical remains from Feature 34 include burned hickory nut fragments and a single fragment of maize. A large quantity of unknown botanical remains were also recovered from this feature. These remains may be a type of fungi. Whether this material was being consumed by the prehistoric inhabitants of the site or was attached to a burned log is not known at this time. The function of Feature 34 could not be determined.

Projectile points were not recovered from Features 34 or 37. Ceramics from Feature 34 were limestone tempered plain, indicating a Woodland affiliation. Both limestone tempered plain and limestone tempered simple stamped ceramics were found in Feature 37 which suggest an early Middle Woodland affiliation.

Bone Concentration

A small concentration of bone (Feature 20) was excavated at Site 40JK27.

Feature 20

Unit 113
Centerpoint N529.32 E466.88
Soil Unit B4, Stratum 2
Level 3

DESCRIPTION: This feature consisted of a small concentration of bones laid down parallel to each other within the culture bearing zone Feature 20 measured 25 cm x 15 cm and was 3 cm thick. This feature was associated with a dark-brown, silty sand loam. The bones do not appear to have been deposited within a pit.

CONTENTS:

F*	Art. Cat. No.	
3	210100	Unclassified Flake
27	210101	Unclassified Flake (micro)
2	800000	Unanalyzable Ceramics
9	000010	Carya sp. (hickory)
1	700000	Unidentified Bone
23	700001	Deer long bone fragments

*Frequency

Discussion

Feature 20 appears to represent a concentration of deer bones which were laid down as a group of functionally interrelated elements. It is possible that they represent some bone tools; however, their decomposed and fragmentary nature prohibited a detailed analysis. The function of this feature could not be determined.

Several small sherds were recovered from Feature 20 but all were too small to analyze. The presence of pottery in Feature 20 does, however, indicate a Woodland or Mississippian affiliation.

Black Stains

Four black stains designated as Features 7 (centerpoint N527.50 E466.50, Soil Unit B4 Stratum 2, Level 2), 8 (centerpoint N517.00 E466.60, Soil Unit B4 Stratum 2, Level 2), 30 (centerpoint N521.20 E469.60, Soil Unit B4 Stratum 2, Level 2), and 31 (centerpoint N528.40 E489.20, Soil Unit B4 Stratum 2, Level 2) were exposed and excavated at Site 40JK27. The soil associated with these features was a black, organically rich, silty sand loam. The boundary separating the black stains from the surrounding gray-brown and reddish-brown soil matrices was often difficult to determine since there was rarely a clear, distinguishable break (Figure VI-112).

Of the four black stains, only Feature 31 was completely excavated (Figure VI-113). It exhibited an amorphous shape, measuring 300 cm x 280 cm with an average thickness of 8 cm. Because Features 7, 8 and 30 were partially excavated, it is difficult to determine the total size and/or shape of these stains. Nevertheless, the excavated areas of these features indicate they had an amorphous to rough circular form.

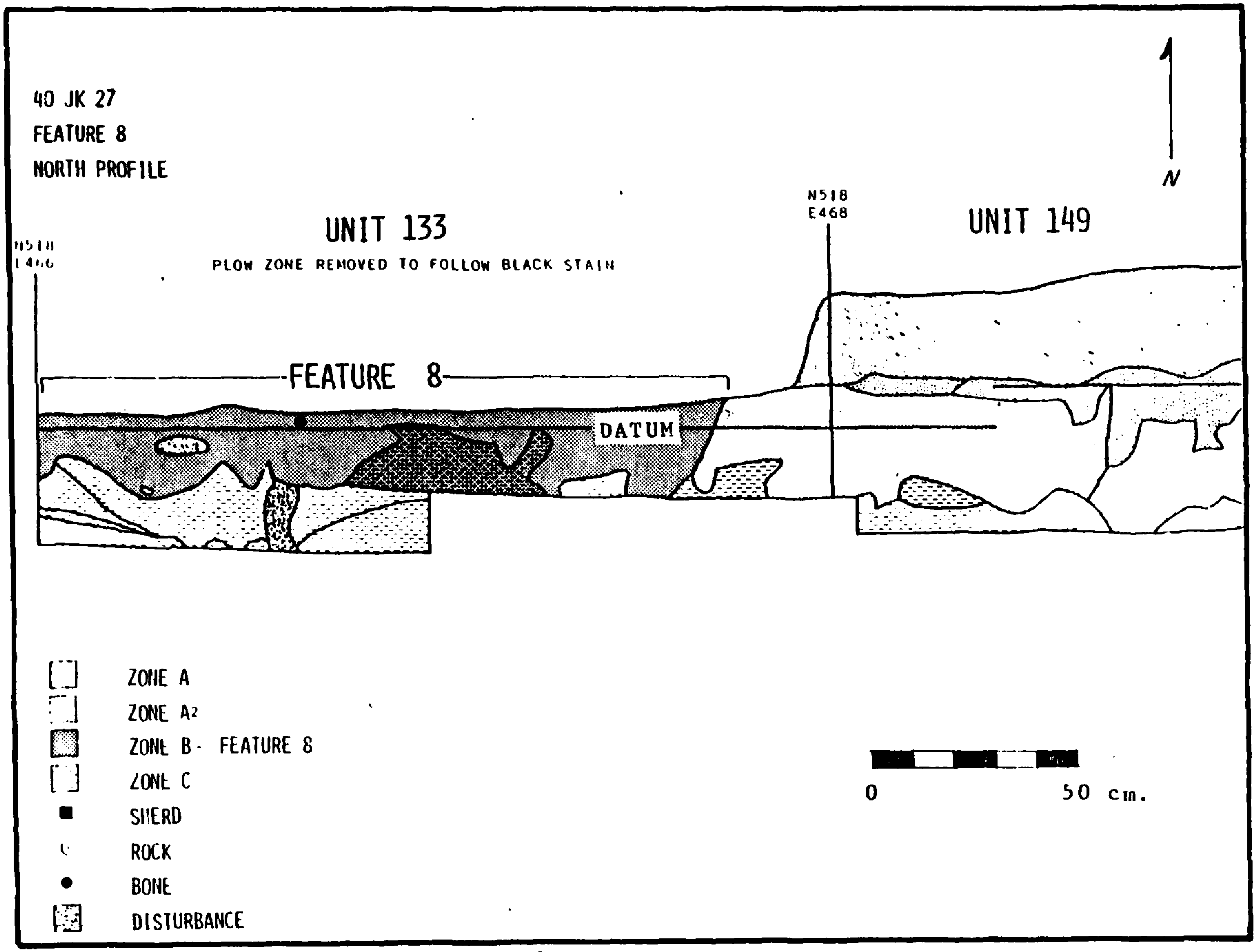


Figure VI-112. Feature 8, Units 133 and 149.

Figure VI-113. Feature 31.

The excavated area of Feature 7 was approximately 8 square meters and was 12 cm thick. Feature 8 measured approximately 4 square meters in area and was 22 cm thick. The excavated area of Feature 30 was approximately 3.5 square meters and was 25 cm thick. In comparison, Feature 31 was 7 square meters and 8 cm thick.

Though the horizontal excavated area of these features ranged from 3.5 to 8 square meters, the volume of earth associated with the excavated area of Features 7, 8, and 30 is almost the same (.96 cubic meters, .88 cubic meters, and .86 cubic meters, respectively). However, only .56 cubic meters were associated with Feature 31.

CONTENTS:

F*	Art. Cat. No.	
		Feature 7
1	110000	Raw Material
83	110100	Chunk
54	110101	Chunk (micro)
5	210000	Core
1	220000	Core (aborted)
480	210100	Unclassified Flake
258	210101	Unclassified Flake (micro)
1	244943	Triangular Biface (round base)
1	311100	Marginally Modified Flake
1	344910	Biface Fragment (Indeterminate Base)
1	442246	Straight Stem 29
2	442647	Side Notched 29
1	550000	Misc. Chipped Stone

183	800000	Unanalyzable Ceramics
11	801000	Limestone Tempered Residual
4	801001	Limestone Tempered Unidentifiable Surface
67	801010	Limestone Tempered Plain
3	801022	Limestone Tempered Cordmarked
14	801030	Limestone Tempered Simple Stamped
4	801050	Limestone Tempered Check Stamped
17	810000	Burned Clay
1	820000	Daub
87	000010	Carya sp. (hickory)
1	000030	Juglandaceae
4	000031	Juglans Nigra (black walnut)
1	000310	Gledistsia triacanthos (honey locust)
1	000399	Unidentified Wild Seed
12	700000	Unidentified Bone
	999999	Fire-Cracked Rock (8,796 g)

Feature 8

106	110100	Chunk
6	110101	Chunk (micro)
12	210000	Core
1	220000	Core (aborted)
472	210100	Unclassified Flake
19	210101	Unclassified Flake (micro)
1	234913	Ovate Biface (round base)
1	311100	Marginally Modified Flake
2	311261	Systematically Modified Flake (incurvate edged)
1	344910	Biface Fragment (Indeterminate Base)
1	442648	Side Notched 27 (Rowan)
1	444901	Biface Fragment (Straight Base, Angular Corners)
1	600894	Hematite Chunk
163	800000	Unanalyzable Ceramics
10	801000	Limestone Tempered Residual
1	801001	Limestone Tempered Unidentifiable Surface
75	801010	Limestone Tempered Plain
26	801030	Limestone Tempered Simple Stamped
6	801050	Limestone Tempered Check Stamped
59	810000	Burned Clay
6	820000	Daub
97	000010	Carya sp. (hickory)
10	000030	Juglandaceae
8	000031	Juglans Nigra (black walnut)
2	000032	Juglans Cinerea (butternut)
13	700000	Unidentified Bone
	999999	Fire-Cracked Rock (14,012 g)

Feature 30

1	110000	Raw Material
111	110100	Chunk

5	210000	Core
1023	210100	Unclassified Flake
1	234903	Biface Fragment (round base)
1	244910	Biface Fragment (indeterminate base)
1	311231	Systematically Modified Flake (notched)
1	311271	Systematically Modified Flake (straight edged)
1	324942	Triangular Biface (straight base, round corners)
1	341300	Uniface Fragment
1	444900	Midsection Biface Fragment
1	600897	Geode
1	622429	Undetermined Ground Stone Fragment (polished)
234	800000	Unanalyzable Ceramics
14	801000	Limestone Tempered Residual
4	801001	Limestone Tempered Unidentifiable Surface
67	801010	Limestone Tempered Plain
4	801022	Limestone Tempered Cordmarked
21	801030	Limestone Tempered Simple Stamped
1	801040	Limestone Tempered Complicated Stamped
4	801050	Limestone Tempered Check Stamped
26	810000	Burned Clay
2	820000	Daub
111	000010	Carya sp. (hickory)
18	000030	Juglandaceae
3	000031	Juglans Nigra (black walnut)
3	000032	Juglans Cinerea (butternut)
2	000466	Cucurbita Rind
46	700000	Unidentified Bone
	999999	Fire-Cracked Rock (7,840 g)

Feature 31

1	110000	Raw Material
153	110100	Chunk
341	110101	Chunk (micro)
1	210000	Core
888	210100	Unclassified Flake
4307	210101	Unclassified Flake (micro)
1	311100	Marginally Modified Flake
1	341251	Systematically Modified Flake (Excurvate Edge)
1	344910	Biface Fragment (Indeterminate Base)
1	412646	Side Notched 28
36	800000	Unanalyzable Ceramics
4	801000	Limestone Tempered Residual
22	801010	Limestone Tempered Plain
3	801030	Limestone Tempered Simple Stamped
1	803000	Shell Tempered Residual
2	803110	Shell Tempered Plain
33	810000	Burned Clay
3	820000	Daub
364	000010	Carya sp. (hickory)

112	000030	Juglandaceae
41	000031	Juglans Nigra (black walnut)
10	000032	Juglans Cinerea (butternut)
1	C00090	Unknown Nut
5	000199	Unknown
5	000220	Vitis sp. (grape)
1	000280	Galium sp.
3	000350	Unknown Wild Seed
10	000451	Zea Mays Kernel
2	000452	Zea Mays Cupula
37	700000	Unidentified Bone
1	700015	Turtle carapace
	999999	Fire-Cracked Rock (680 g)

*Frequency

Discussion

The four excavated black stain features (7, 8, 30 and 31) cannot be adequately interpreted independent of an examination of the spatial distribution of features, botanical remains and cultural materials recovered from Site 40JK27. An examination of the lithic assemblage associated with and in the vicinity of these features should provide data relevant to interpreting the function of the black stain features. The results of this comparison are presented in Chapter VII. In this section some initial observations and comments, to be expanded upon in the following chapter, are presented.

As previously noted the four excavated black stain features were characterized by an organically rich, dark-black silty sand loam. It has been suggested that these features represent the remains of prehistoric house floors. However, the absence of internal features (such as hearths or storage pits and/or associated post molds) coupled with their general amorphous to rough circular form tends to argue against this hypothesis.

These black stains may have been formed by the repeated dumping in one locality of organic debris from earth ovens or roasting pits. If this was the case, one would expect to find a concentration of wood charcoal, rocks and botanical remains within each black stain. It should be noted that although the soils associated with Features 7, 8, 30 and 31 were organically rich, they did not contain a concentration of wood charcoal. Also the black stains did not contain as much rock as Features 39 and 40 which were directly associated with concentrations of carbonized wood.

An alternative hypothesis which deserves consideration is that these areas represent localities within the site where vegetal material was processed and/or dumped in a series of spatially related activity areas. The decay of this organic material may have resulted in the formation of the black soils associated with Features 7, 8, 30 and 31 and would account for the absence of ash and wood charcoal in these features. If these areas were associated with plant processing, then one would expect to recover a substantial quantity of botanical remains from these features.

The largest quantity and variety of botanical remains from these features was found in Feature 31. However, this feature was the only one for which all the feature fill was floated. The other black stain features were sampled to varying degrees. Botanical material from Feature 31 included hickory, black walnut, butternut, grape, galium and maize. Hickory, black walnut and butternut and squash were recovered from Feature 30. Cultigens were not recovered from Features 7 and 8, but these features did yield a substantial amount of hickory nut. Though the botanical remains from the black stain features do not conclusively demonstrate the nature of the function associated with these features, these remains do suggest that Features 7, 8, 30 and 31 were in some way related to food processing and/or disposal at Site 40JK27.

Limestone tempered plain, simple stamped and check stamped ceramics were well-represented in these features. These ceramics along with two Side Notched 29 (212646) projectile points from Feature 7 and a Side Notched 28 (412646) from Feature 31 date these features to the early Middle Woodland.

Burials

Two infant burials (Features 3 and 5C) were excavated at Site 40JK27.

Feature 3

Unit 102 and Backhoe Trench XI
Centerpoint: N530.26 E463.28
Soil Unit B4, Stratum 2
Level 2

DESCRIPTION: Feature 3 (Figure VI-114) was exposed during the excavation of Backhoe Trench XI. The burial appears to have been placed in a pit, (measuring 28 cm x 30 cm) and was covered with several small rocks. The hand excavated portion was 6 cm thick. This feature was associated with a dark-brown, sandy silt loam matrix.

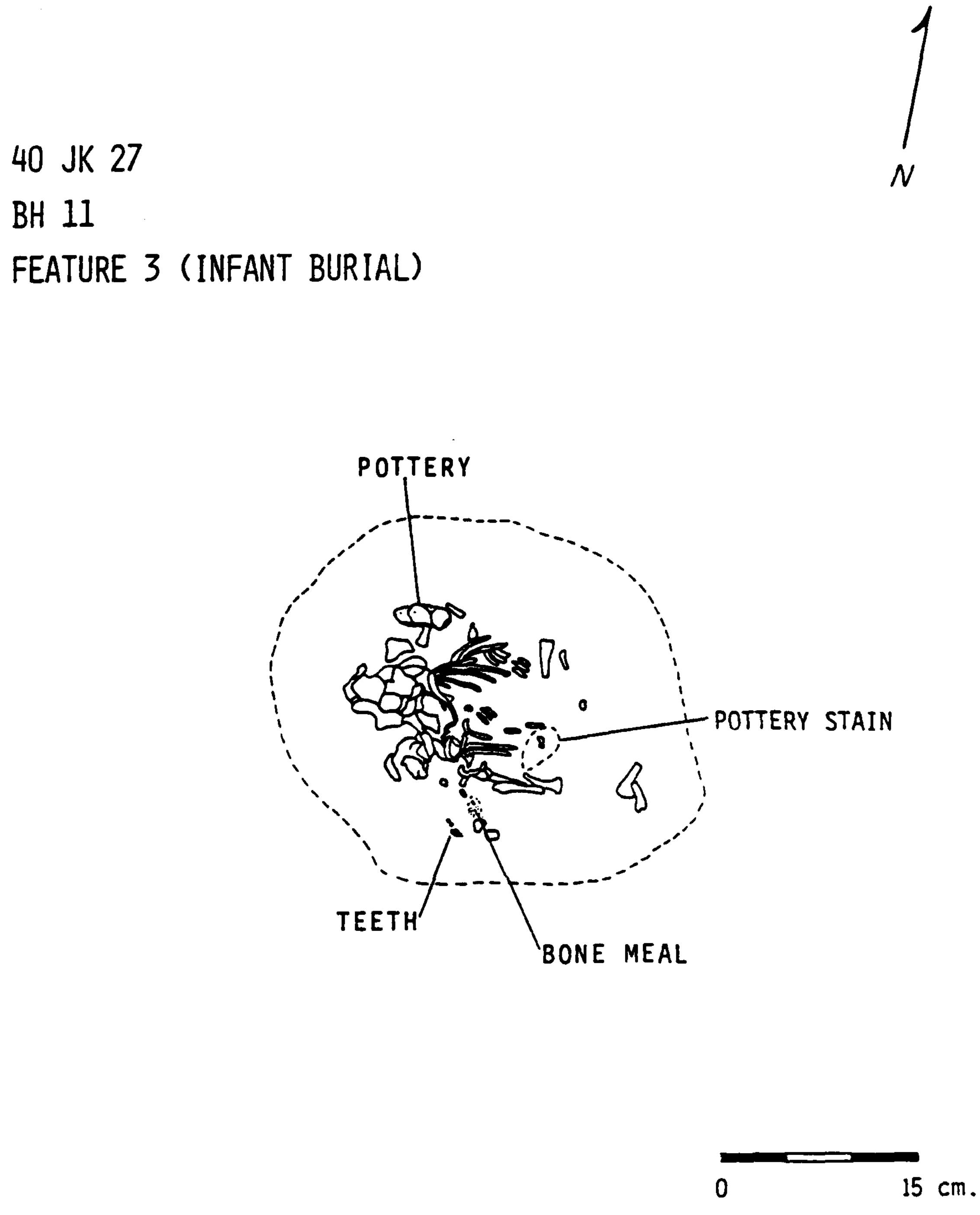


Figure VI-114. Feature 3.

Skeletal remains from Feature 3 were of a fragmentary nature and the sex of this individual could not be determined. However, this burial does appear to be the remains of an infant 6 months of age or younger.

Those osteological elements which could be identified include both cranial and post cranial fragments. Small cranial fragments were identified, along with one crown of an incisor and the basal portion of the occipital which measured 1.5 cm x 1.5 cm. Post cranial material from Feature 3 included fragments of sacrum, inominates, humerii, radii, femora, tibia, ribs, carpals and tarsals. A single element suitable for measurement included an ulna which was 6.4 cm long.

CONTENTS:

F*	Art. Cat. No.	
4	210100	Unclassified Flake
1	600889	Fossil
2	800000	Unanalyzable Ceramics
1	801030	Limestone Tempered Simple Stamped
8	700000	Unidentified Bone
6	700018	Turtle carapace

Feature 5C

Unit 107
Centerpoint: N530.84 E463.33
Soil Unit B4, Stratum 2
Level 2

DESCRIPTION: Feature 5C was an infant burial situated in a small circular pit which had been disturbed by Feature 5A. It was impossible, therefore, to determine the exact dimensions of the associated pit. The excavated portion of Feature 5C measured 24 cm x 21 cm, and was 21 cm thick.

The right arm and both legs of the infant burial had been removed by the intrusion of Feature 5A. It was possible, however, to determine that the body was oriented northeast by southwest and that it appeared to have been buried in a flexed position.

As with Feature 3, the sex of the individual from Feature 5C could not be determined. The infant buried in Feature 5C is considered slightly younger than the infant buried in Feature 3.

Skeletal material from Feature 5C could be divided into cranial and post cranial fragments. The basal section of the occipital (which measured 1.5 cm x 1.4 cm) constitutes the only cranial bone recovered. Post cranial bones included phalanges, vertebra, inominate, sacrum, rib and humerus fragments.

CONTENTS:

F*	Art. Cat. No.	
1	110101	Chunk (micro)
2	210100	Unclassified Flake
15	210101	Unclassified Flake (micro)
1	000421	Phalaris Caroliniana (maygrass)
7	700000	Unidentified Bone
3	700021	Possible Fish
	999999	Fire-Cracked Rock (15 g)

*Frequency

Discussion

Features 3 and 5C represent the remains of two infants no older than 6 months in age. Ceramics from Feature 3 suggest a Woodland affiliation for this burial. Although no diagnostics were recovered from Feature 5C, Woodland ceramics were found in Feature 5A which is believed to have intruded this burial, suggesting that Feature 5C dates to the Woodland Period or earlier.

Structures

Structural remains from Site 40JK27 are represented by 19 small cyclindrical pits which are interpreted as prehistoric postmolds. Ten postmolds (Features 5B, 11A, 11B, 12, 13A, 13B, 17, 21, 32 and 33) appear to be the remains of a small circular structure with a diameter of 3 to 3.5 m (Figure VI-116). Two pits with straight sides and round bottoms which may have been storage pits, one postmold, and two infant burials were identified along the western 1/3 of the structure. A fired area which is interpreted as a surface hearth was identified in the northeast corner of the structure. The relationship of this structure to other features identified at Site 40JK27 will be discussed in Chapter VII.

Summary

A variety of cultural features including small cylindrical pits, rock-lined pits, straight-side round-bottom pits, shallow sloping-side round bottom pits, fired areas, rock concentrations, rock clusters, charcoal concentrations, bone concentrations, black stains and burials were exposed and excavated at the Hurricane Branch Site. These features cannot be completely understood until their spatial distribution is examined and the cultural material from features compared to that from the surrounding soil matrix. However, some observations concerning the excavated cultural features from Site 40JK27 can be made at this point.

Botanical remains from features included burned nut fragments, herbaceous seeds and cultigens. Hickory was the most common arboreal seed recovered from features. However, walnut, butternut, hazelnut and oak were also present. Herbaceous seeds from features included: chenopodium, sumac, grape, maygrass, iva, amaranthus and galium. Cultigens from features included maize and squash.

Faunal material from features included deer, fish, turtle, reptile and amphibian. Mussel shells were also recovered from the feature fill. However, with the exception of Feature 20 no concentrations of faunal remains were recovered from the features excavated at the Hurricane Branch Site.

Aside from the small cylindrical pits which are thought to be postmolds and the two burials excavated at Site 40JK27, features which could be assigned a function were related to food storage, processing or cooking. Features 4, 5a, 16, 42, 49, and 50 may have been storage pits. Feature 29, 39 and 40 are thought to have been roasting or cooking pits. The burned soil associated with Feature 35 and the large amount of botanical remains recovered from this feature suggest that it may have been related in some manner to food production at Site 40JK27.

Although the function of the black stains (Features 7, 8, 30 and 31) is not completely understood, the black organic soil associated with these features coupled with the presence of a variety of botanical remains and the absence of wood charcoal, suggest they are related in some manner to plant processing at the site. A primary goal of the spatial analysis in Chapter VII will be directed at understanding the function of these black stains and their relationship to other features at the site.

The majority of the datable features belong to the Middle Woodland Period. This is demonstratedd by the fact that, with the exception of three shell tempered sherds recovered from Feature 31, all the ceramics from the cultural features were limestone tempered. Limestone tempered plain pottery is the predominant type, but limestone tempered simple stamped and check stamped are also well-represented.

Projectile points from features include one Lancelate 7 (412923) and two Side Notched 29 (442647) and one Side-notched 28 (412646). These points also indicate a Middle Woodland cultural affiliation.

Features 19 and 23, (i.e., rock clusters), based on their stratigraphic placement in the yellow-brown, compact, silt loam zone (Soil Unit A2, B Soil Horizon) which is associated with Archaic material can be confidently dated to the Archaic Period. The absence of ceramics from Features 49 and 50 and the presence of _Iva_ in Feature 49, which is believed to be too small to be associated with the Middle Woodland occupation of Site 40JK27, suggest that these features may also date to the Archaic Period.

CHAPTER VII

INTERNAL SITE CORRELATIONS: CHRONOLOGY, SPATIAL PATTERNS AND ACTIVITY AREAS

by
Thomas Gatus
David Pollack
Tom Dillehay
Nancy O'Malley
Jack Rossen

Introduction

The primary purpose of this chapter is twofold: 1) to present and analyze the combined spatial patterns of the total surface and subsurface artifact assemblage as detected through the use of scattergrams, SASPLOT, SYMAPs and CMAPs for the Hurricane Branch Site and 2) to determine the site function, internal activity loci and the chronologic position of the various cultural components. The socio-cultural interpretations in this chapter will be used as the primary data base for reconciliation of the Hurricane Branch Site in a regional interactional framework for the Archaic Period and the Woodland Period to be presented in the following chapter.

There are four main sections in this chapter. The first discusses the surface collected data. The second details the testing phase. The third deals with the extensive subsurface excavation work, particularly focusing on the Archaic and Woodland components at the site. A summary of results are provided at the end of each section. The fourth section provides conclusions concerning the chronological and functional implications of the Hurricane Branch Site.

It should be noted from the outset that various, and often unequal, levels of analysis and interpretation are provided for spatial studies on each cultural material category and each cultural component as well as the manipulation of combined categories for understanding past human behavior at the site. This differential coverage of materials and uneven approach to some levels of interpretation are explained by 1) differences in the quantity and quality of artifactual categories recovered from the site (e.g., the preservation factor which impacts the type and diversity of material available for analysis and sampling of activity areas across the site), 2) the degree and magnitude to which different material categories can be subjected to different computational manipulation, 3) the absence or presence of comparable materials recovered from local and regional sites which would enhance the methodological and interpretative approach to analysis of the data, and 4) the incomplete analysis of the larger artifact data sets. In regard to the last point, less emphasis has unfortunately been placed on the lithic collection and on the botanical remains from the site due to incomplete studies of these material categories. Comparably speaking, the lithics and plant remains were by far the two largest data sets retrieved during the course of excavation at the site. Due to time constraints, neither collection was subjected to exhaustive analyses. For instance, detailed flake analysis was not performed on the lithic materials and a portion of the micro-plant remains has not been totally studied. Also, a heavy emphasis on lithic reductive stages is not presented, although an in-depth study of the spatial distribution of stone artifacts is presented. (The limitations of analysis of these materials are discussed in the appropriate previous chapters.) More complete studies are already underway and will be available in the future in the format of a master's theses prepared by graduate students at the University of Kentucky.

Surface Collection-Integration and Interpretation

As discussed in Chapter II, a large surface collection was recovered from the Hurricane Branch Site in order to ascertain 1) the extent of the surface distribution of artifacts and, therefore, the size of the site, 2) the types and diversity of cultural materials for determination of cultural affiliation and chronology and 3) where artifacts clustered so as to develop an excavation strategy.

As a result of this collection, four segregated areas of cultural activity were defined in the field (Figures II-2) on the basis of chipped and ground stone tools, fire-cracked rock and ceramic sherds. (The latter category however, proved to be a very small component of the assemblage in terms of total frequency.) As mentioned previously, construction of SYMAPS during laboratory analysis ultimately resulted in the detection of a fifth area. Thus, the following discussion treats five areas instead of four. Figure VII-1 illustrates the surface distribution of the lithic materials and the five areas of cultural activity as interpreted through SYMAPs.

The following discussion will first present general results of the surface collection data in all areas and then organize the detailed presentation according to artifact categories, under which the specific areal findings will be presented.

FIGURE VII-1

LEGEND

FREQUENCY

MINIMUM	0.0	9.50	24.50	49.50
MAXIMUM	9.50	24.50	49.50	370.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVEL	1	2	3	4
	....	XXXXXXXXX	●●●●●●●●●	■■■■■■■■■
	....	XXXXXXXXX	●●●●●●●●●	■■■■■■■■■
SYMBOLS	....	XXXXXXXXX	●●●●●●●●●	■■■■■■■■■
	....	XXXXXXXXX	●●●●●●●●●	■■■■■■■■■
	....	XXXXXXXXX	●●●●●●●●●	■■■■■■■■■

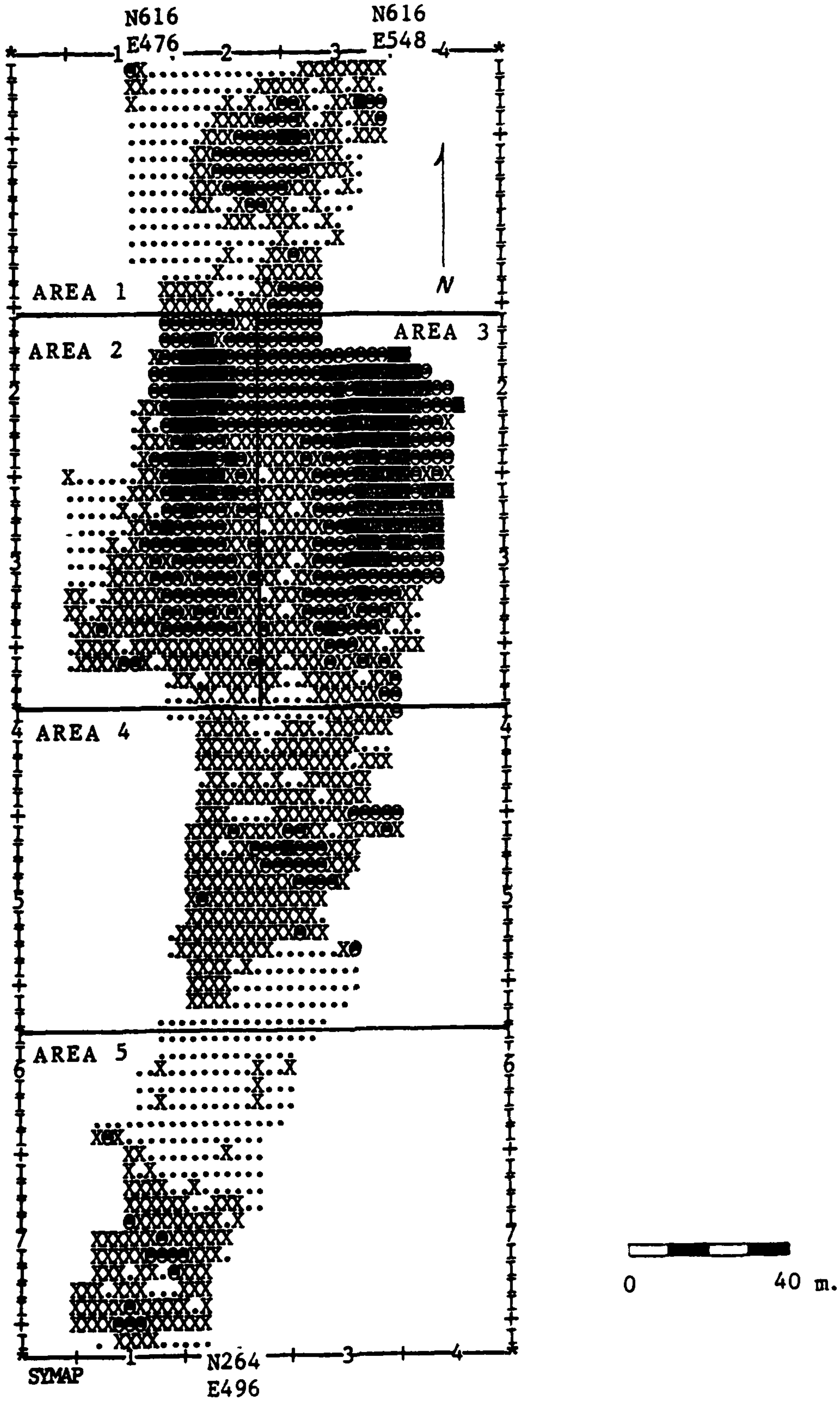


Figure VII-1. Distribution of chipped lithic artifacts on the surface of the Hurricane Branch site.

It is apparent from the surface collected data that the densest concentrations of all artifacts is in the northern half of the site, particularly in Areas 2 and 3 and, to a lesser extent, in Area 1 (Figure VII-1). Since these areas are of differing size, one to one comparisons of artifact frequencies are not feasible. Areas 4 and 5, at the extreme southern end of the site, had relatively low artifact densities by comparison and the space between these two areas had the lowest artifact density in the entire project area (Figure VII-1). Surface collection and subsurface testing (Unit 100) also yielded a low artifact density in the alluviated western section of Area 1.

In addition, a low elevated portion of the central and southwestern area (Area 2 and 4) of the site along the river bank and a narrow central section of Areas 4 and 5 (including the ridge) were not plowed due to dense coverage by honeysuckle. This unplowed area is believed to be less important culturally since test pits and backhoe trenches revealed scant artifactual debris and that the area was a filled slough (see Chapter V).

It is interesting to note the longitudinally bimodal distribution of lithic artifacts in Areas 2 and 3. The space that intersects these two areas is along the eastern slope of a 0.5 m high and 120 m long ridge (see Chapter V) that runs north and south along the central axis of the site. The density of cultural materials in this intersectional area is very low compared to adjacent eastern and western areas. Subsequent testing in Areas 4 and 5 failed to document extensive intact subplowzone deposits.

Special attention was given to the patterning of surface artifacts in these areas in hopes of delineating a cultural explanation for the observed bimodal clustering of materials. As discussed later, the subsurface testing and extensive excavation program in Areas 2 and 3 negated the idea of a possible village plan with a "plaza" sector of central activity area flanked by residential structures which might explain the low density of artifacts in the intersectional space. However, the subsurface evidence did suggest that other discrete cultural activities are most accountable for the elongated "doughnut" shaped pattern of surface clusters observed in Areas 2 and 3. (A later discussion on geomorphological studies coupled with the above cultural evidence will also shed further light on this observed anomaly.)

Returning to the discussion of the distribution of artifacts, it should be noted that the clustering of artifacts in Area 2 diminishes rather sharply to the west. This pattern is explained by incomplete land clearing and recent siltation on the western flank of the ridge, both of which have affected the surface density and distribution of cultural debris.

Spatial Analysis of Artifact Categories

The following presentation outlines the spatial distributional characteristics of specific artifact categories across the site. Appendix F presents tables documenting the specific artifact categories and frequencies by Surface Areas 1-5.

Surface Ceramics

Ceramic data from the surface collection is sparse, numbering only 53 sherds. These were generally recovered between N584 and N356 in Areas 1, 2, 3 and 4. Limestone tempered plain sherds were also recovered from Areas 1, 3, and 4 and represent the largest category of surface collected ceramics. Limestone tempered sherds exhibiting simple and check stamping (one sherd each) occur in Area 4. Two cord-marked specimens were recovered from Area 1.

Two other specimens in Area 2 are shell tempered plain sherds. These specimens were the only examples of shell tempered sherds in the surface collection. One quartz tempered sherd was recovered from Area 3.

Surface Fire-cracked and Other Rock

Fire-cracked and other rock occur in all areas of the site but vary in density from area to area (Figure VII-2). The densest accumulations are notable in Area 2 where the distribution of the rock generally concurs with the chipped lithic assemblage. Areas 1, 3, 4 and 5 have lower densities which are more or less uniformly scattered. This pattern is in contrast to chipped lithic specimens which exhibit tighter clustering, particularly in Areas 2, 3 and 5.

Surface Chipped Stone

Chipped stone artifacts include the major categories of modified flakes, unifaces, bifaces, projectile points and drills. These groupings vary considerably in frequency and, therefore, cannot each be discussed comparably. For instance, unifaces and drills occur in very low frequencies, thereby hampering recognition of spatial patterning.

LEGEND

WEIGHT IN GRAMS

MINIMUM	0.0	9.90	99.90	299.90
MAXIMUM	9.90	99.90	299.90	2444.00

FREQUENCY DISTRIBUTION OF DATA POINT VALUES IN EACH LEVEL

LEVEL	1	2	3	4
	....	XXXXXXXXX	@@@@@@@@@	■■■■■■■■■
	....	XXXXXXXXX	@@@@@@@@@	■■■■■■■■■
SYMBOLS	....	XXXXXXXXX	@@@@@@@@@	■■■■■■■■■
	....	XXXXXXXXX	@@@@@@@@@	■■■■■■■■■
	....	XXXXXXXXX	@@@@@@@@@	■■■■■■■■■

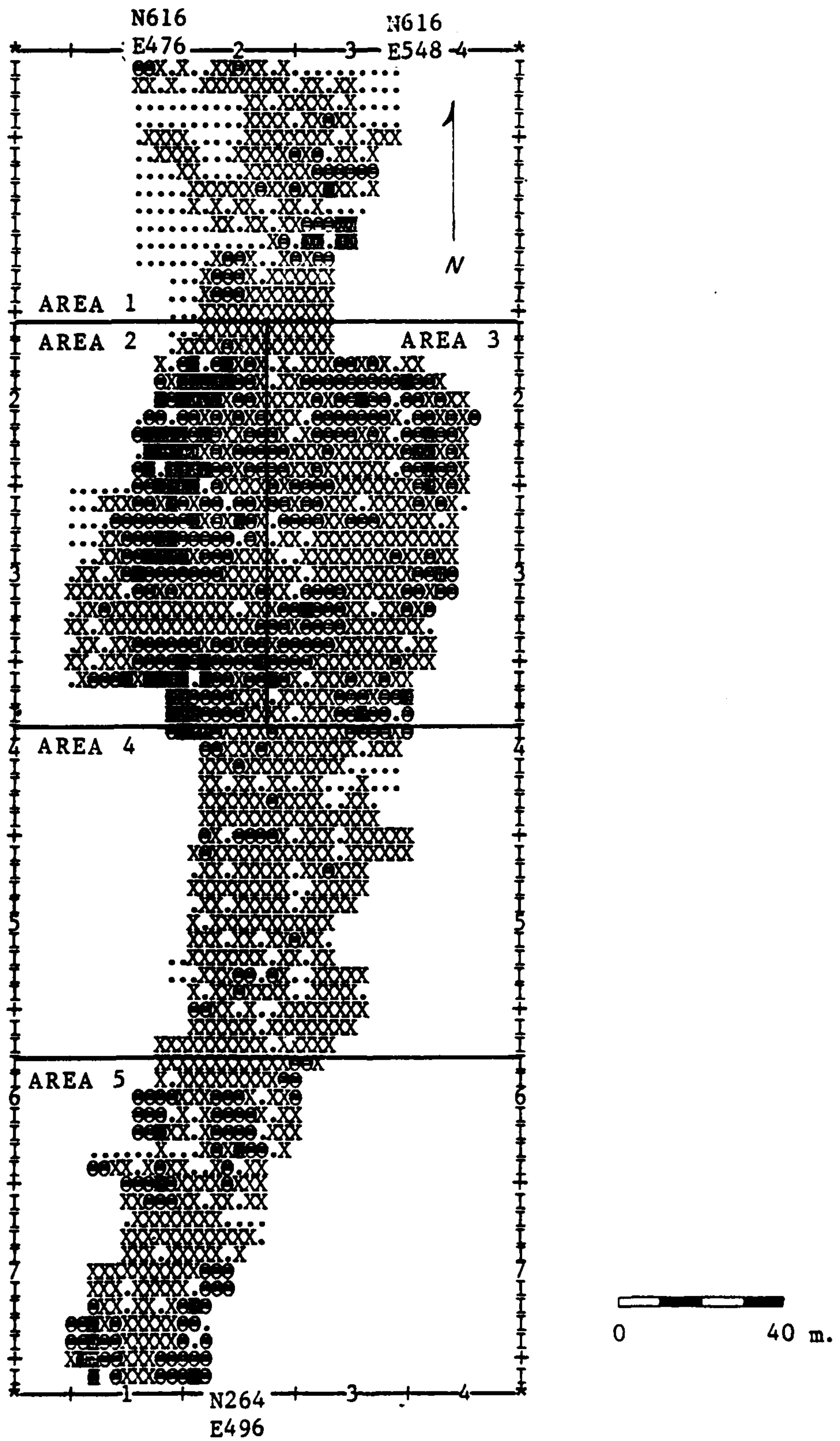


Figure VII-2. Distribution of fire-cracked and other rock on the surface of the Hurricane Branch site.

Surface Modified Flakes and Unifaces

Modified flakes constitute a relatively numerous category; however, their distribution appears to be fairly uniform across the site. The non-complex form and probable multifunctionality of such tools precludes strong arguments for differential activities between areas, using this category; moreover, each area contains similar proportions of the six subtypes.

Unifacially chipped implements occur in very low frequencies. No differential spatial patterning between areas is recognizable.

Surface Unhafted Bifaces

Unhafted bifaces also occur in all areas more or less uniformly. The general pattern is a preponderance of Primary Flaking bifaces, followed by Secondary Flaking specimens and a very low proportion of Initial Reduction bifaces. Only Area 5 departs from this pattern with a higher proportion of Secondary Flaking bifaces than Primary Flaking specimens. This pattern is in keeping with the general trend noted in the discussion of the lithic assemblage. The preponderance of Primary Flaking bifaces is expected since specimens are most likely to be discarded at this stage. Most of the bifaces are fragmentary and many are aborted, suggesting that they represent discards from the biface manufacturing process.

Surface Projectile Points and Drills

Projectile point distributions suggest horizontally distinct components for different temporal periods (Figure VII-3). Specifically, Archaic points are proportionally better represented in Area 5 although their general distribution over the site tends toward uniformity. They are noticeably sparse in Area 3 in spite of the fact that this area was geologically stable during the Archaic Period (see Chapter V). Area 3 is predominantly composed of Woodland projectile points -- almost to the exclusion of diagnostic lithics of other cultural/temporal periods. Areas 1 and 2 also contain a preponderance of Woodland points over other temporally diagnostic styles. The sample of diagnostic projectile points from Area 4 is so small that no interpretation can be made from the data.

Figure VII-4 illustrates a "close-up" scattergram of projectile points in Areas 2 and 3. When comparing the distribution of the Copena Triangular and Copena projectile

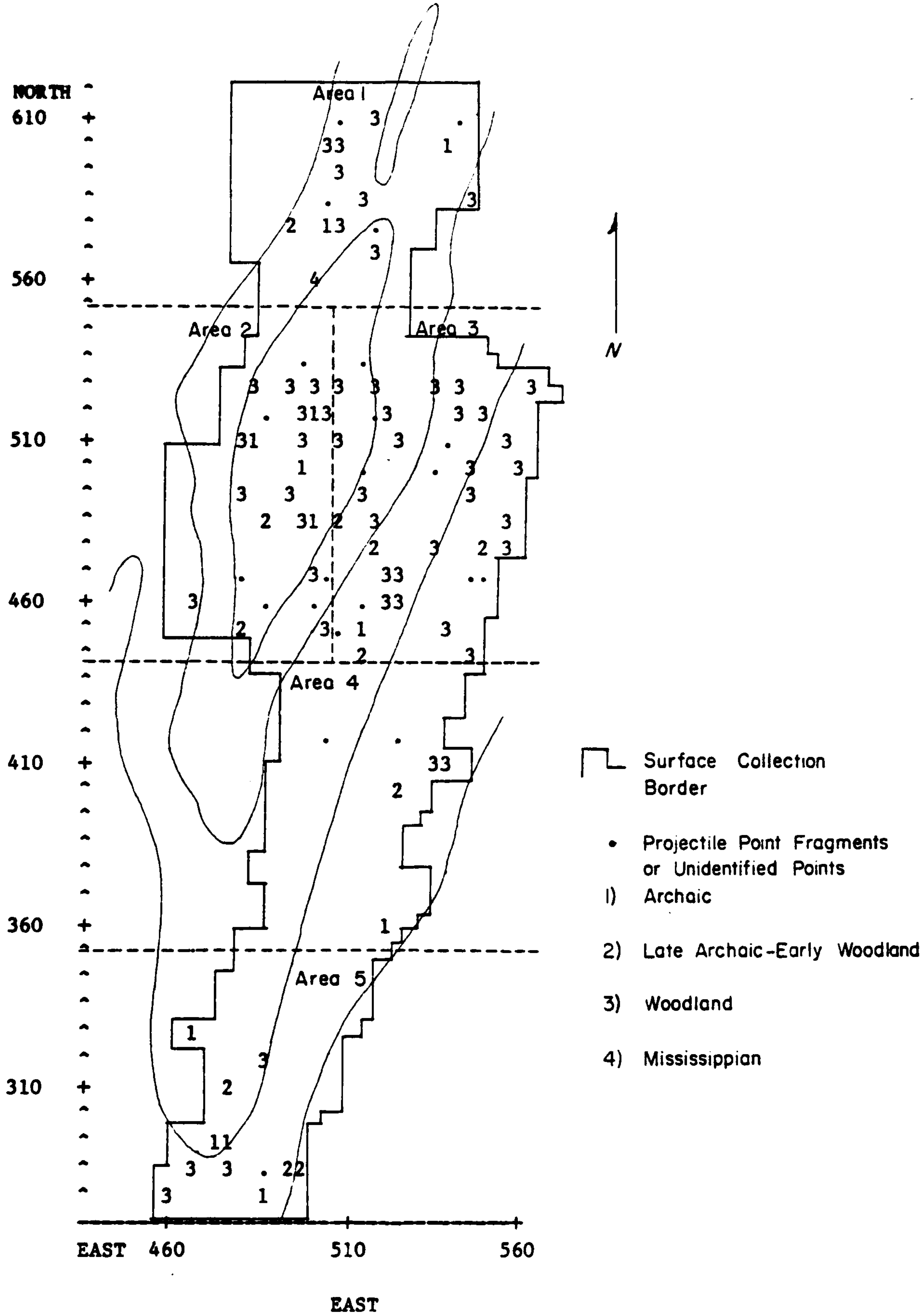
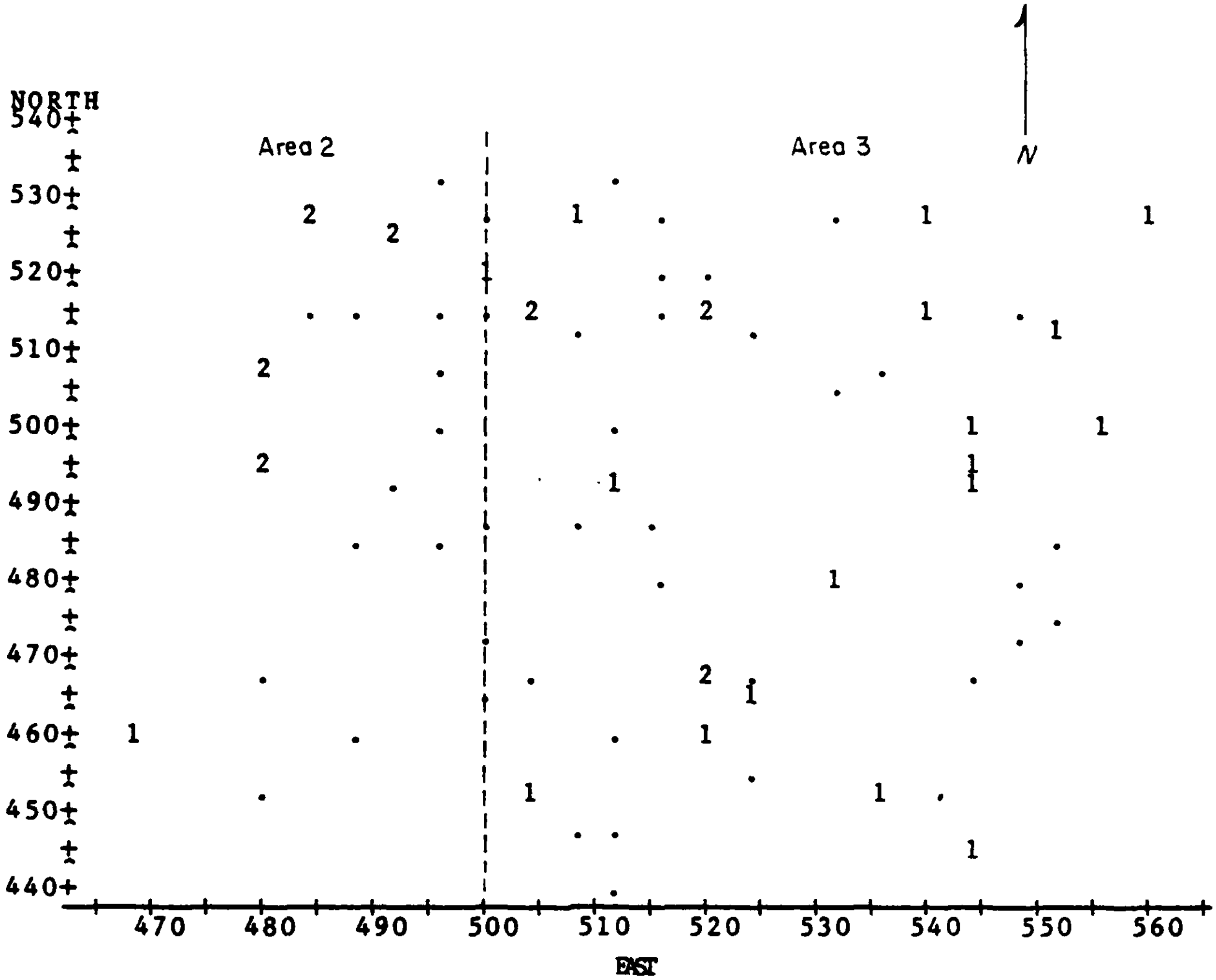


Figure VII-3. Temporally diagnostic projectile points by surface area.



• Other Projectile Points from Areas 2 and 3

1 = Lanceolate 7 (Copena)
Triangular 12 (Copena Triangular)

2 = Side notched 28
Side Notched 29
Side Notched 30
Side Notched 32

Note: If one or more projectile points of the same type occur in one locality, only one of the points will appear on the map; the other will be masked. Thus, in area 3 only 16 of the 20 Lanceolate 7 and Triangular 12 projectile points recovered from area 2 are illustrated.

Figure VII-4. Woodland projectile point styles in Areas 2 and 3.

points to the weakly side-notched projectile points (Side Notched 28-30 and 32) in these areas, they are relatively discrete spatially. Copena types (mostly Copena Triangular) are found predominantly in Area 3 while weakly side-notched points cluster in Area 2. Of the total number of Copena and Copena Triangular points recovered (n=26), 20 were found in Area 3.

The few Woodland projectile points found in Area 1 are also predominantly of the weakly, side-notched cluster suggesting a closer temporal/cultural affinity with Area 2 than with Area 3. Due to the distance (ca. 50 m) between the northern extent of artifacts clustered in Areas 2 and 3, and those in Area 1, it is likely that Area 1 was a separate occupation.

A low artifact density was noted at the north end of Areas 2 and 3. Despite the fact that part of this area was not plowed, the most likely reason for this low density is the presence of a small stream or erosional gulley which has cut through the cultural deposits (see Chapter V). The stream might have served as a topographical feature which bounded discrete occupational loci across these areas, thus accounting for the distributional patterns discussed here. However, since Woodland projectile points in Areas 1 and 2 are more closely allied than those in Areas 1 and 3, it would appear that Area 1 may have been a discrete loci of Woodland occupation.

The frequency of drills is very low. No spatial patterning, is, therefore, recognizable.

Surface Cores

A scattergram of the distribution of cores is not presented here because of the apparent lack of distinct spatial patterns. It was observed, however, that the vast majority of cores are of small size (averaging 65 g). The most plausible explanation is that the cores were intended predominantly for the manufacture of flakes, from which a variety of tools can be made. One other pattern worth noting is that few cores were found on the intersectional ridge between Areas 2 and 3.

Surface Reworked Tools

The last category of chipped stone for which a scattergram was generated but not illustrated was reworked lithics. Preliminary analysis shows that only six tools were determined to be reworked among the surface data. It is significant that they were all found along the western edge of Area 3 (E520 to E560). There might be some covariance between these tools and the previously mentioned Copena projectile points which cluster in this area of the site.

Surface Ground Stone Artifacts

Ground stone artifacts occur in very low frequency on the surface, numbering only 30 specimens. Just over half (n=16) occurred in Area 3 which also contained the greatest tool diversity. Area 1 contained the next highest density with seven specimens. The remaining areas only contained two or three specimens.

Discussion and Summary of Surface Collection

An analysis of the surface distribution of cultural materials at the Hurricane Branch Site has produced information relevant to subsequent testing and excavation strategies and to a preliminary assessment of important cultural/temporal patterns and activities--particularly during the Woodland occupation. Initially, surface collected data indicate that there are two distinct components, Archaic and Woodland, at the site. The Archaic occupations appear to be rather ephemeral and are concentrated in the extreme southern end of the site (Areas 4 and 5). The Woodland occupation(s) appear to be more intensive in certain places, particularly within the cultural debris concentrations designated as Areas 2 and 3. Both the Archaic and Woodland concentrations were subsequently tested and excavated. They are discussed below in detail.

Two important issues emerged from the surficially distributed Woodland artifacts. First, there was a significant dissimilarity, both functionally and temporally, between Area 2 and 3. This dissimilarity was expressed through the differential distribution of projectile points, fire-cracked rock and ground stone. Presently, it appears that the earliest Woodland occupation took place in Area 3 and, later, as the river bank area stabilized (see Chapter V), in Area 2.

The Copena/Copena Triangular points (associated with the McFarland Phase of the Tennesee River) were found predominantly in Area 3. The occupations in Area 1 and 2 were dominated by a cluster of weakly side-notched projectile points and other tools (associated with the later Owl Hollow Phase in the Tennessee River drainage). A second, and equally important conclusion to be drawn from the surface data concerns site function during the Woodland occupation. The various bifaces represented in the collection and general lack of hammerstones strongly argue against a workshop function. Some tool manufacture and maintenance, however, was certainly important as shown by the 8,500 flakes recovered from the surface of the site. Whether these tools were associated primarily with faunal or floral processing activities, can not be determined from the surface collection. It is also worth noting that the 53 ceramic sherds recovered during the gridded surface collection show evidence of Woodland domestic occupation.

The last significant conclusion to be drawn here is that the lack of cultural debris on the eastern slope of the ridge which separates Area 2 and 3 indicates that this area might have been void of any primary residential or maintenance activities, an issue which will be analyzed in greater detail later.

In spite of the previously mentioned limitations of the data, two major conclusions can be drawn from the surface collected data:

1) most of the surficially collected cultural materials are representative of the Woodland component at the Hurricane Branch Site and are most similar to the transitional McFarland/Owl Hollow phases described by Faulkner in the Tennessee River Valley, and

2) the site contains evidence of temporally and spatially discrete functions.

In order to further investigate these issues and determine the nature of the subsurface deposits, a series of test pits was excavated. These units and the new data they provided are presented in the following section of this chapter.

Testing Strategy and Results

Introduction

Near the end of the controlled surface collection, a testing strategy was initiated to address issues raised in the preceding section and to determine the cultural/temporal identity and stratigraphic nature of Areas 1 through 5. The strategy, which was geared toward identifying intact sub-plowzone deposits, was operationalized by excavating 1 m x 2 m units (see Chapter II for details) and by initiating a series of shovel probes and core drillings. The majority of the 1 m X 2 m units were placed in Areas 1, 2 and 3 where the greatest concentration of surficial cultural debris was encountered (Figure II-2). Of these test pits, three were extended into larger block excavations and are dealt with later in this chapter under sections treating the Archaic and Woodland components. Disregarding the units that were extended, there were seven test units which will be discussed in this section (Units 100, 101, 104, 117, 124, 130 and 136). Also, two isolated features, 49 and 50, which were encountered in Backhoe Trench XX (Area 2) are presented here. Units 100 and 101, in Area 1, and Unit 104 in Area 4 were excavated in order to address geologic issues and will be discussed in this section as will the remaining units (117, 124, 130 and 136) which were excavated in response to issues relevant to the cultural components of the Hurricane Branch Site. It should be noted that all test units are composed of 1 m x 2 m pits.

Unit 123, although it was isolated in Area 1, will be addressed in the discussion of the subsurface Archaic component which follows this section. Units 105, 106 and 112, located in Area 3, will be addressed in the discussion of the Archaic/Woodland components.

Geological Test Units

Test units 100 and 101, located in the northwest corner of Area 1, were excavated in order to determine if the surface concentration of artifacts in this area had any subsurface depth. Neither of the units produced any culturally diagnostic tools. The position of these test units is within an area of recent alluvium of considerable depth.

Trench III, located 8 m south of Unit 100 and about 12 m west-southwest of Unit 101 was excavated to a depth of approximately 3 m in recent alluvium and revealed only scant cultural debris. The types and frequencies of artifacts recovered from Units 100 and 101 are given in 1 m x 1 m provenience in Appendix F. Geological data from these test units are discussed in Chapter V.

Cultural Test Units

Unit 124 was located outside the gridded area, north of Area 1, on a small hummock which was suspected of being a cultural mound. A 1 m x 2 m hand excavated unit was opened. The plowzone produced several flakes and no diagnostic artifacts. Two subplowzone levels produced few flakes. A great quantity of large angular gravels within an extremely compacted, disturbed soil matrix was observed in all levels. On the basis of this evidence, the hummock was judged to have been produced by bulldozing for the construction of the nearby factory and no further work was performed in the area. The flakes recovered in the soil matrix of the test unit were apparently removed from an in situ context in the barrow pit area.

The eastern slope of the ridge between Areas 2 and 3 was not extensively tested (although Units 105/112 and 106 are near the interface with Area 2) due to the results of preliminary backhoe tests. Backhoe Trenches IV, V and XX showed a very light density of cultural materials below the plowzone in the intersectional space between Areas 2 and 3, confirming the light scatter of surface artifacts observed in the area by the surface survey. Several artifacts, consisting primarily of unmodified flakes, but including a chipped stone tool, were recovered at the junction of the plowzone and a culturally sterile clay zone (Soil Body A3, B horizon). However, there were no indications of subsurface midden or intact features; and therefore, no further work was carried out.

Two units, 104 and 136 were placed around the horizontal extremities of the site to test the spatial extent of subsurface deposits and to define the cultural affiliation of any recovered materials, specifically to determine whether intact Early Archaic deposits were present. Unit 117 was in Area 4 and 130 was in close proximity. Cultural materials recovered from these units are presented in Appendix F.

A brief review of this appendix reveals that no diagnostic artifacts were recovered from Unit 104. Unit 136, at the extreme southern end of the project area, yielded one diagnostic specimen, a broken Late Archaic Matanzas projectile point. A 10 cm thick midden was superimposed by the plowzone. Water filled the test pit at a depth of 30 cm, impeding work conditions. Since few artifacts were recovered in the second subsurface level, and since the high watertable made excavation difficult,

the units in Area 5 were terminated in order to redirect the excavation effort toward salvaging intact midden and features in Areas 1 and 2.

Units 117 and 130 in and near Area 4 produced some interesting data. Unit 117, located on the eastern slope of the ridge which bisects Areas 2 and 3, produced a Copena Triangular projectile point in the plowzone and four ceramic sherds in Level 2. However, few artifacts and no midden stains were observed. The second level in the subplowzone was composed of hard clay and produced relatively few artifacts and no cultural features; the excavation was, therefore, terminated.

Unit 130 (stated above) was positioned almost directly along the centerline of the ridge at its southern terminus between Areas 2 and 3. The most significant information derived here is the potential cultural stratigraphy. A Dickson point, usually considered Early Woodland in origin, was found in the plowzone. Beneath it, in Level 2, was a Flint Creek-like point which may overlap in time with the Dickson type, but is also known from Late Archaic contexts. As with Unit 117, no cultural features were encountered; the subplowzone was virtually sterile and composed of hard packed clay. The excavation was, therefore, terminated in order to redirect the effort towards more productive areas of the site.

Although several Early Archaic projectile points were recovered in Areas 4 and 5, the investigators are confident that the Early Archaic component is primarily a plowzone phenomenon resulting in part from cultural debris being deposited on a stable ridge and ridge flank which received no substantial additional alluvial deposition. These and temporally later deposits became incorporated into a rather thin cultural veneer which was completely exposed by modern plowing. When Early Archaic artifacts were recovered *in situ* in the Area 1 excavations, attempts at expanding the search for Early Archaic deposits in Area 4 were abandoned.

Shovel Probes and Core Drilling

In addition to the geological and cultural test units discussed above, several dozen shovel probes and core drillings (using hand held soil augers) were made for the purpose of defining the depth of the cultural deposits and the areal extent of the black stains in Area 2. These units were spaced randomly and the contents were not screened. No diagnostic artifacts were recovered.

Two other shovel probes, Unit 106 in Area 3 and Unit 122 in Area 1, were also opened but were not expanded any further due to heavy disturbance by natural factors.

Isolated Features

Two features (49 and 50) were encountered below plowzone in Backhoe Trench XX, (Area 3), southeast of the Woodland excavation block. Cultural materials retrieved from them were discussed in Chapter VI. Both features were interpreted as possible storage or refuse pits. While their cultural affiliation remains unknown, an Archaic or possibly a Woodland association is suspected. Feature 49 in particular, might be an Archaic feature since a single small Iva annua seed corresponding in size to previously docmented achenes in other Archaic sites was recovered (see Chapter VI, botanical section).

Summary

While the controlled surface collection was being finalized and the preliminary field analysis concluded, a series of shovel probes was initiated (1) to answer questions raised by the surface data, (2) to determine the cultural/temporal identity and stratigraphic nature of Areas 1 through 5, and (3) to determine the location of intact subsurface deposits. When features or intact midden were encountered, the hand excavated units were expanded into larger excavation blocks. Those that failed tc meet these criteria were terminated. Ten units were located beyond the major excavation blocks, and of these, seven, which were dicussed in some detail above, were abandoned almost immediately. The remaining three, located in Areas 1, 2, and 3 will be discussed in subsequent sections since they were expanded into extensive block excavations and their location and contents articulate with either the Archaic or Woodland components.

Subsurface Data

Introduction

Subsurface data recovered during the excavation phase of the project will be presented in the remainder of this chapter. Essentially, two major excavation areas were expanded from the test units and two major cultural components, Archaic and Woodland, were further identified on the basis of diagnostic chipped stone and ceramic artifacts recovered from subsurface deposits.

Area 1 contained a major portion of the Archaic component and a zone of Woodland deposits which collectively will be referred to as the North Block. Another Archaic component was defined in Units 105 and 112 in Area 3. The primary Woodland component was concentrated in Area 2, specifically west of E500 between N508 and N533, in a subplowzone context in the North Block (Area 1) and in Units 105 and 112 in Area 3 on the east flank of the ridge. Area 2 excavations will be referred to as the South Block which contains, in addition to a single large excavated block, several expanded test units.

Subsequent sections in this portion of the chapter will present a discussion of the Archaic component in both the North Block and Units 105/112, a brief comparison of the stratified Archaic and Woodland deposits in the North Block and Units 105/112, and a detailed discussion of the primary Woodland occupation in Area 2 as revealed by excavation in the South Block.

The component in Area 2 (Cultural Series 2C, see below) is poorly represented. Only two units (126 and 142) in this area yielded nondiagnostic artifacts in stratigraphic deposits below the defined Woodland component (Cultural Series 2B). Based exclusively on depositional location, the component lying below the Woodland deposits is equitable with the Archaic component, yet may be Early Woodland or even transitional Archaic/Woodland. The Woodland affiliation is demonstrated by a few, small limestone tempered sherds. (These sherds might have filtered down into the component.) Whatever the case may be, the Archaic component at the site is discussed in light of Areas 1 and 3 (Cultural Series 1C and 3C).

The North Block was composed of eight units: 115, 119, 120, 121, 122, 123, 127 and 147. The South Block included 38 units: 102, 107, 108, 109, 110, 111, 113, 114 116, 118, 125, 126, 128, 129, 131, 132, 133, 134, 135, 137, 138, 139, 140, 142, 143, 144, 145, 146, 148, 149, 150, 151, 152, 153, 154, 155, 156 and 157. Units 105, 106, and 112 are located in Area 3. These latter three units contain both Woodland and Archaic components and are treated as ancillary to the North Block discussion. They will be referenced subsequently as Units 105/112. in Chapter II.

In order to discuss the cultural components both horizontally and vertically throughout the site, a system of designators, referred to as Cultural Series, has been developed and presented in Table VII-1. Cultural Series A refers to all plowzone deposits across the site. Cultural Series B generally refers to all Woodland components. Cultural Series C refers to the Archaic component and an unidentified component in the South Block. Each excavated area has an individual designator: 1 being the North Block, 2 the South Block and 3 Units 105/112.

All subsurface excavations are discussed in terms of areal designations, block excavations within areas, and unit excavations within the blocks. Excavation units are 2 x 2 m in size and several units may be combined in various horizontal sizes and shapes to comprise a block excavation. Reference to unit excavations are made by their grid coordinate numbers (see Chapter II).

Table VII-1. Areal and Cultural Designators.

Culture Series	North Block	Depth
Area 1		
1A	Plowzone	Level 1
1B	Woodland	Level 2
1C	Archaic	Levels 3-5
Area 2		
	South Block	
2A	Plowzone	Level 1
2B	Woodland	Level 2-4
2C	unknown	Level 5-8
Area 3		
	Units 105/112	
3A	Plowzone	Levels 1-2
3B	Woodland	Levels 3-4
3C	Archaic	Levels 5-9

The nature of the Archaic and Woodland occupations may be defined by the presence of diagnostic artifacts and features. The horizontal distribution of each specific artifact category and feature is not detailed here, but is incorporated below in the spatial analysis of artifacts that define these two major components.

<u>Definition of the Archaic Occupation (Cultural Series 1C and 3C)</u>

The major subsurface Archaic deposits are located in the North Block (Culture Series 1C) and in Units 105/112 (Culture Series 3C). A profile illustrating the stratigraphic relationships between Culture Series 3C and other series within these excavation units is presented in Figure VII-5. In Figure VII-5 the Archaic deposits are

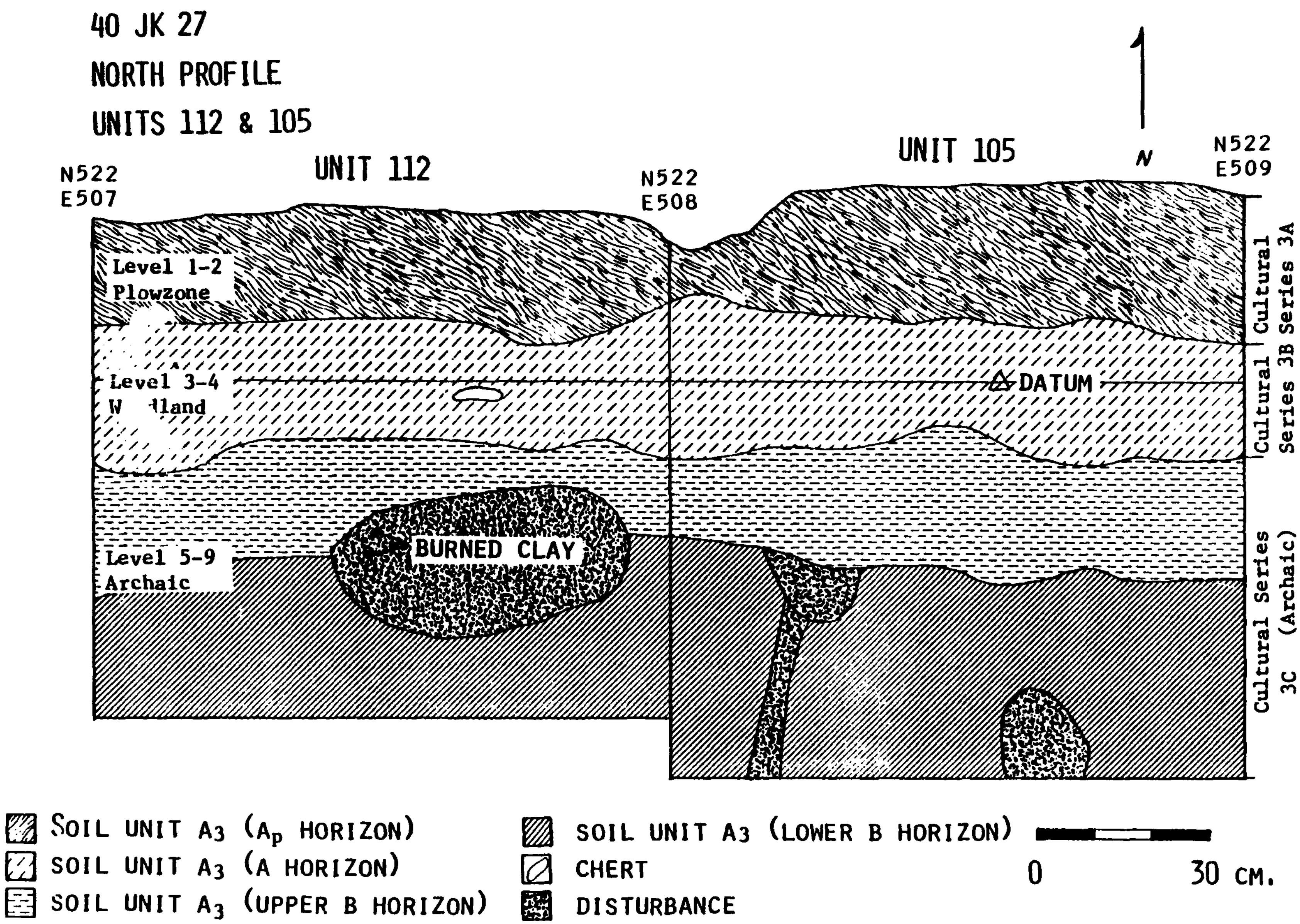


Figure VII-5. Profile of the North Wall of Units 105 and 112.

found in Levels 5-9 (Culture Series 3C) which are characterized by a dark yellow to orange-brown, sandy, silt-loam matrix containing manganese concretions (Soil Unit A3, B Horizon; see Chapter V). Overlying these deposits is the Woodland component (Culture Series 3B) in Levels 3 and 4 which is characterized by disturbed, mottled, medium brown, sandy silt-loam with some manganese concretions (Soil Unit A3, A Horizon; see Chapter V). Above these, mixed cultural deposits occur in the plowzone which was excavated as two levels (Cultural Series 3A). The plowzone is characterized by a dull yellow-brown, friable sandy silt matrix (Soil Unit A3, Ap horizon). (Soil Unit A3, Ap Horizon; see Chapter V).

The North Block contains a basal Archaic component (Culture Series 1C) in Levels 3-5 which is characterized by a yellow to light yellow silty loam matrix (Soil Unit A2, Lower B Horizon, see Chapter V), grading into a compact clayey loam (Figure VII-6). These levels contain many root casts and inclusions of brown sand. Immediately above is the Woodland component (Culture Series 1B), contained in Level 2, which is characteristically a yellow to light brown and medium brown, mottled silty loam (Soil Unit A2, Upper B Horizon; see Chapter V) containing burned clay (Units 119 and 120) and rodent disturbances. These deposits are unevenly distributed throughout the profile. The uppermost deposits (Culture Series 1A) constitute the culturally mixed plowzone which is a light brown silty sand.

In general, Culture Series 1C is represented by Early and Middle Archaic artifacts which are not stratigraphically discrete. For example, a Le Croy, a Pine Tree and a Big Sandy projectile point were all recovered from the same level. The latter is a Middle to Late Archaic point while the others are Early Archaic in date. This general mixing of the Archaic deposits, where the evidence for occupations during the subperiods are not well-segregated, relegates the interpretative discussion to a diachronic scenario for a period of about 5,000 years. The projectile points are not the only data set which indicate some early mixing of the Archaic deposits. Ground stone artifacts such as battered fragments (possible hammerstones), a pitted cobble, a grinding slab and an abraded stone are found in these same levels. While ground stone tools are known to occur in Early Archaic deposits (Chapman 1977), they are more common during and after the Middle Archaic. With this problem in mind, the cultural affiliation of Features 19 and 23 (both rock clusters) is best defined as Early to Middle Archaic.

One other difficulty with the Archaic deposits in both Culture Series 1C and 3C is the presence of ceramics in and below Level 4. Culture Series 1C contained five small sherds (excluding the 15 sherds recovered in the disturbed Unit 122). Culture Series 3C produced 27 small sherds in or below Level 5. The small size of these sherds suggests

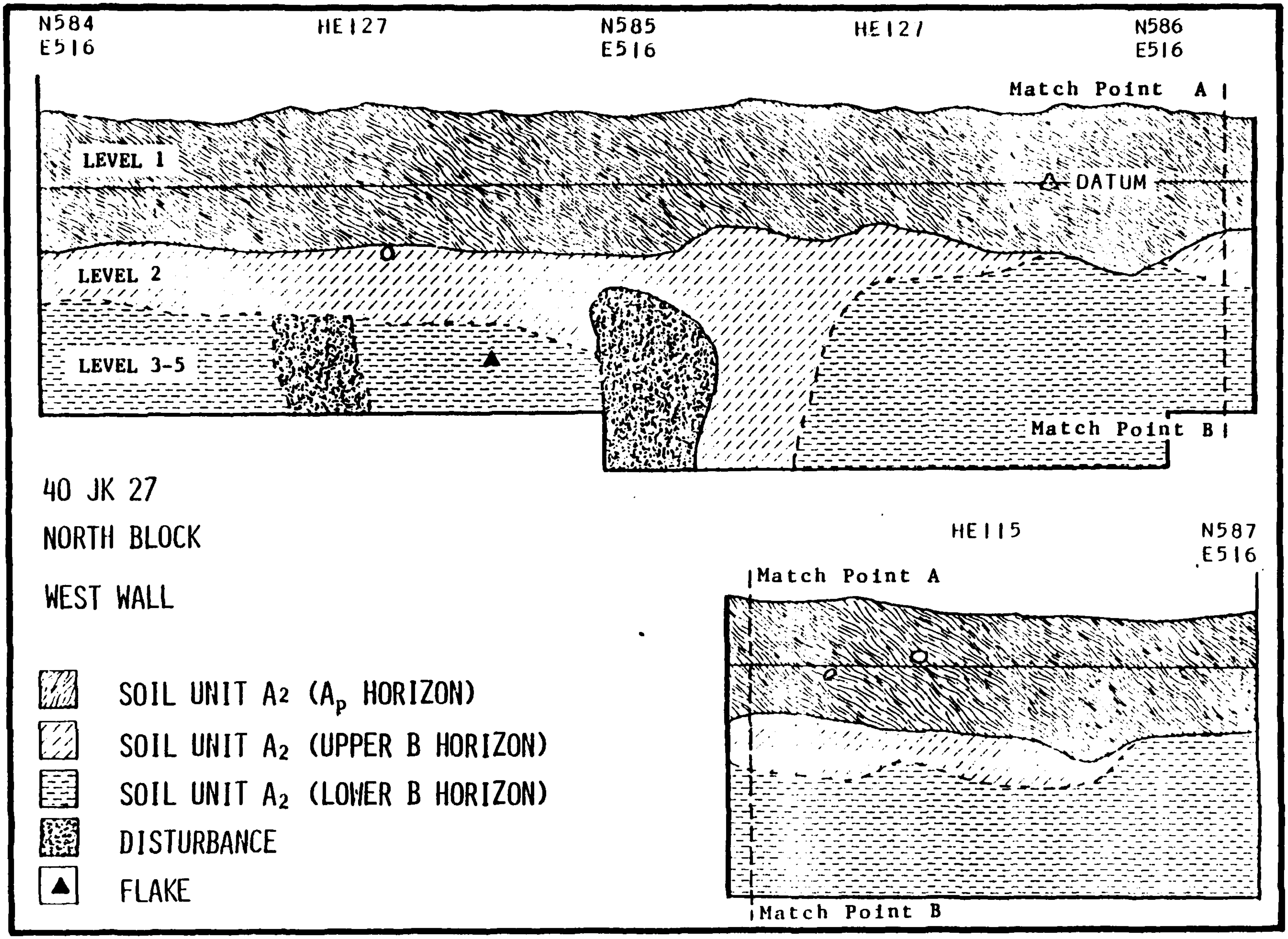


Figure VII-6. Profile illustrating the stratigraphic relationships between Cultural Series 3C and other series within units 105 and 112.

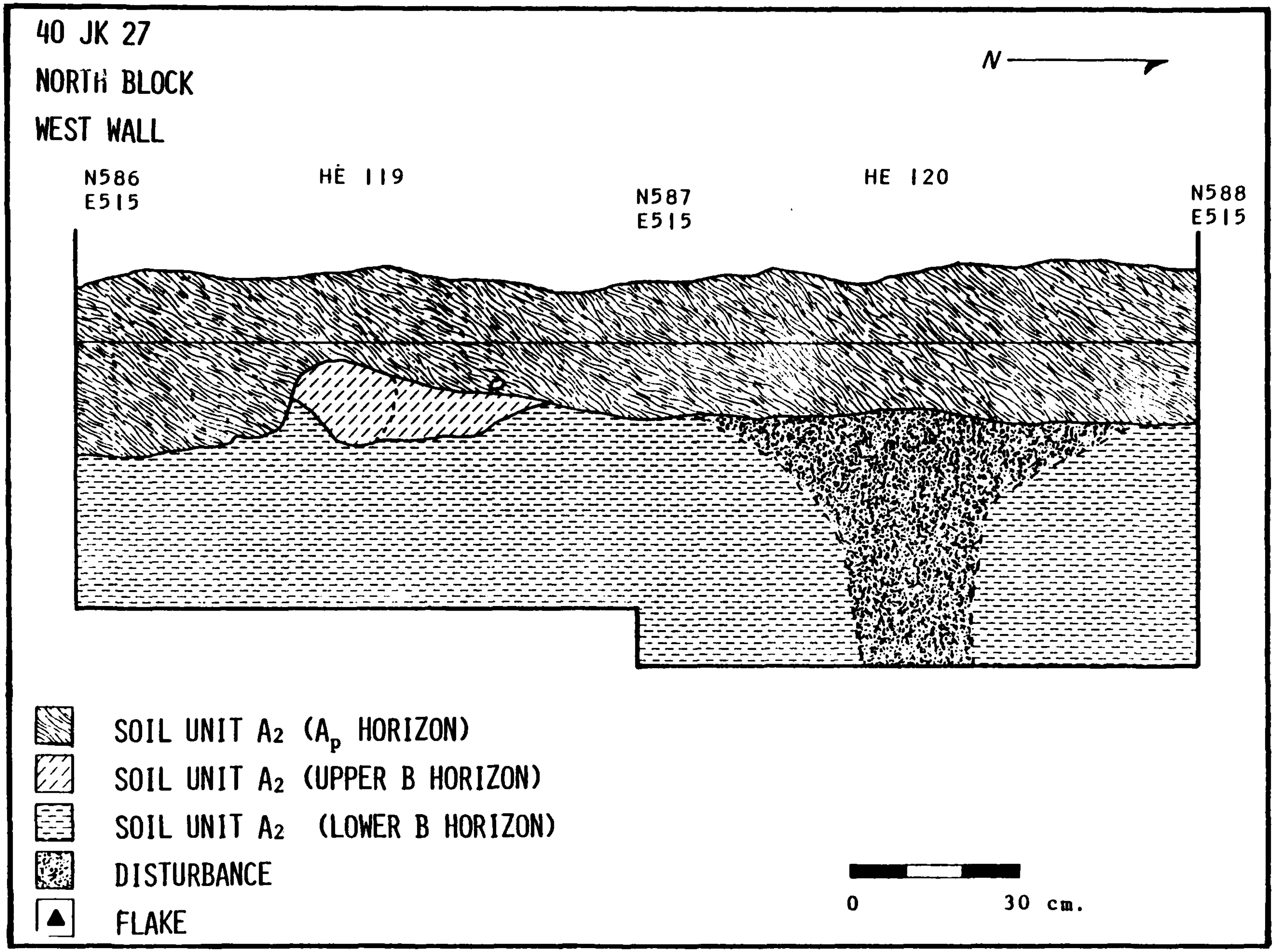


Figure VII-6. Continued.

that they have worked their way down into the Archaic levels from the overlying Woodland deposits.

The following two sections of this chapter will address the general spatial patterns observed among the cores, modified flakes, unifaces, bifaces, burned rock, ground stone and flora of the Archaic component (Culture Series 1C and 3C).

Patterns of Chipped Stone Usage

Distributional patterning was examined for the major chipped stone artifact groupings of cores, modified flakes, unifaces, bifaces and projectile points. Since the Archaic component yielded only two features, little can be said concerning the distribution of artifacts in and around features; however, differential frequency and distribution of artifact types may be taken as representing variable activities across the site.

Cores

Figure VII-7 illustrates the distribution of cores for Culture Series 1C and 3C. Proportionally, the greatest number of cores occur in Unit 112 followed by Unit 147. The North Block contains fewer cores per unit area.

Modified Flakes

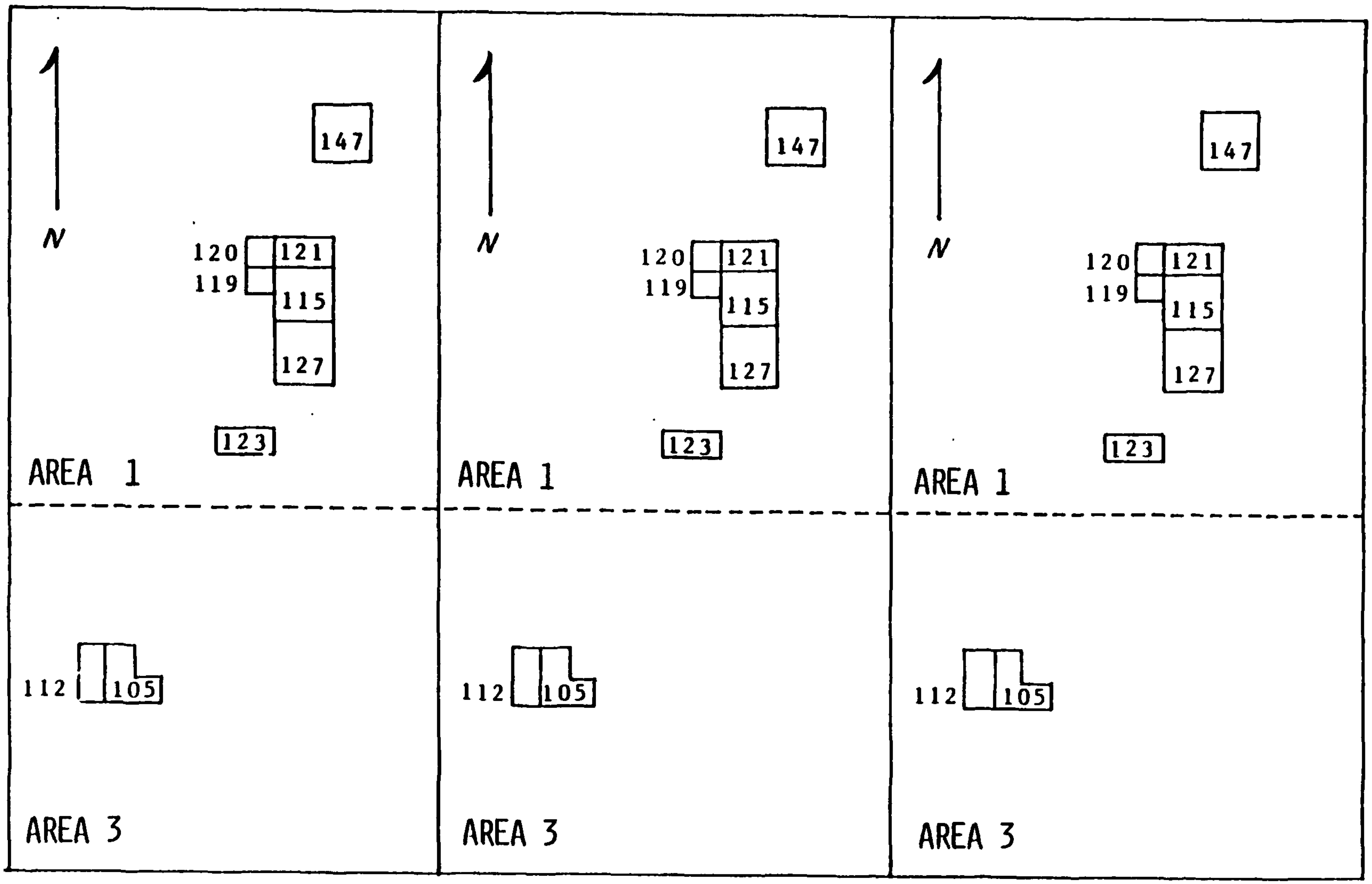
Relatively few modified flakes are associated with the Archaic component (Figure VII-7). They occur in the same areas as the cores but their frequencies are so similar from unit to unit that the significance of their distribution does not appear to be very great. The highest frequency per unit area occurs in Unit 121.

Bifaces

Bifaces are proportionally most frequent in Unit 115 and Units 105/112 (Figure VII-7). As with modified flakes, this distribution is generally but not strongly coincident with the cores. As suggested previously in the summary section of the lithic artifact discussion, the majority of bifaces are considered to be intended as preforms. What is not clear is whether they were produced from flakes originating from on-site cores. In absence of a debitage and material type analysis, this question cannot presently be resolved.

Several factors undoubtedly contributed to the final distribution. These include, minimally, the loci of biface manufacturing, disposal behavior and natural agents of dispersal. For instance, blanks may have been struck from

FIGURE VII-7



Excavation Units

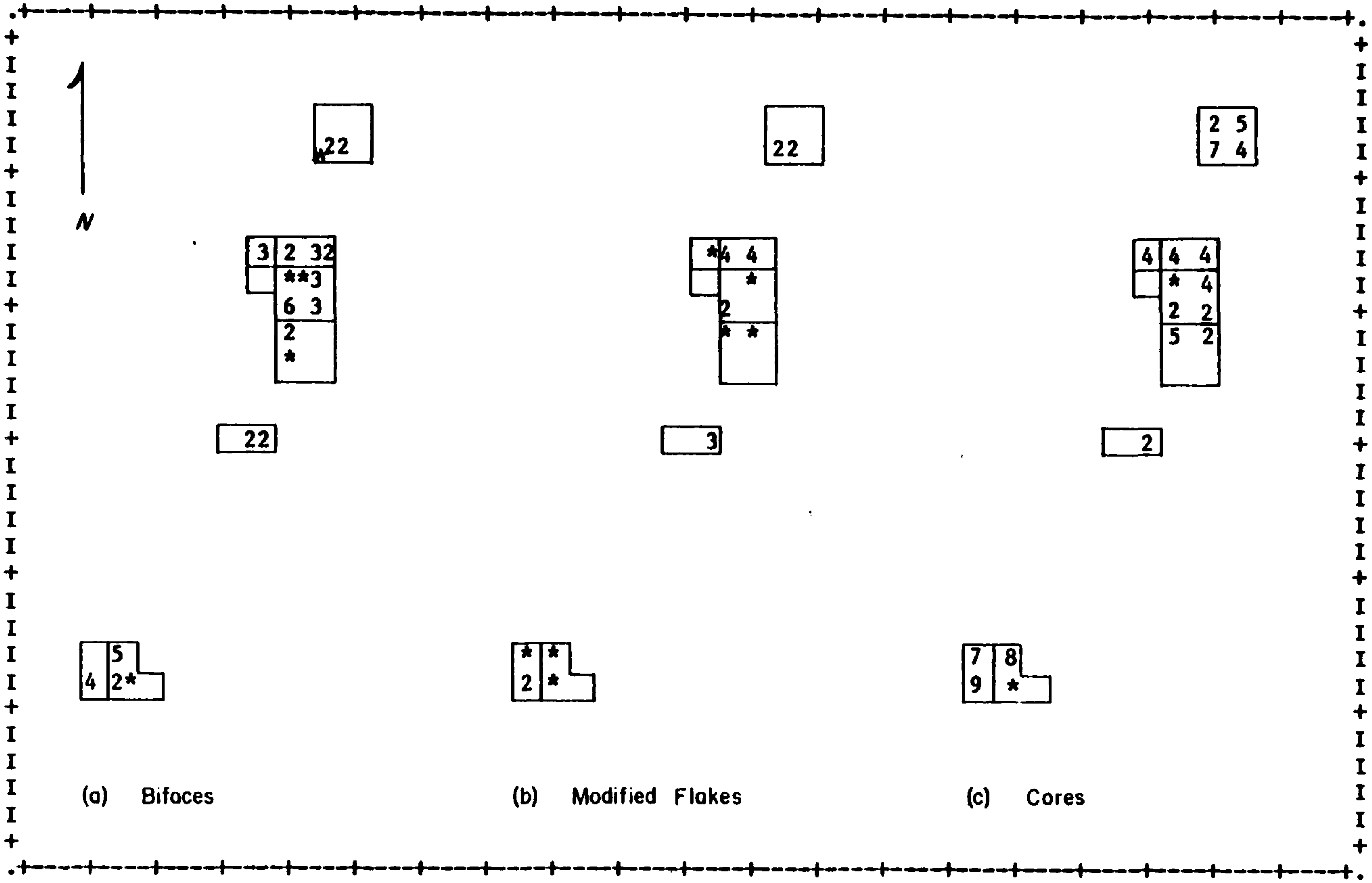


Figure VII-7. Distribution of bifaces, modified flakes, and cores in Cultural Series 1C and 3C.

the cores then transported elsewhere for finishing. If they were not successfully completed, they may have been discarded away from the locus of blank origin. Therefore, depending upon where and for what purpose a biface was taken to final form, discard behavior may vary considerably. Finally, natural agents of dispersal always represent a factor in distributional patterns that is difficult to adequately assess.

In terms of distribution of biface type, Reductive Stages II-IV are represented in essentially comparable proportions in both Culture Series 1C and 3C. Given the smaller areal extent of Culture Series 3C, the relatively large number of cores and bifaces per unit area may be indicative of a biface production area at this locus. All of the bifaces associated with Series 3C are basal fragments for which general shape cannot be discerned. The same is true for the majority of bifaces from Series 1C; however, the larger sample contains a few triangular forms and a single ovate specimen. On this rather meager sample, one may suggest a biface industry directed toward the production of predominantly triangular biface preforms.

Projectile Points

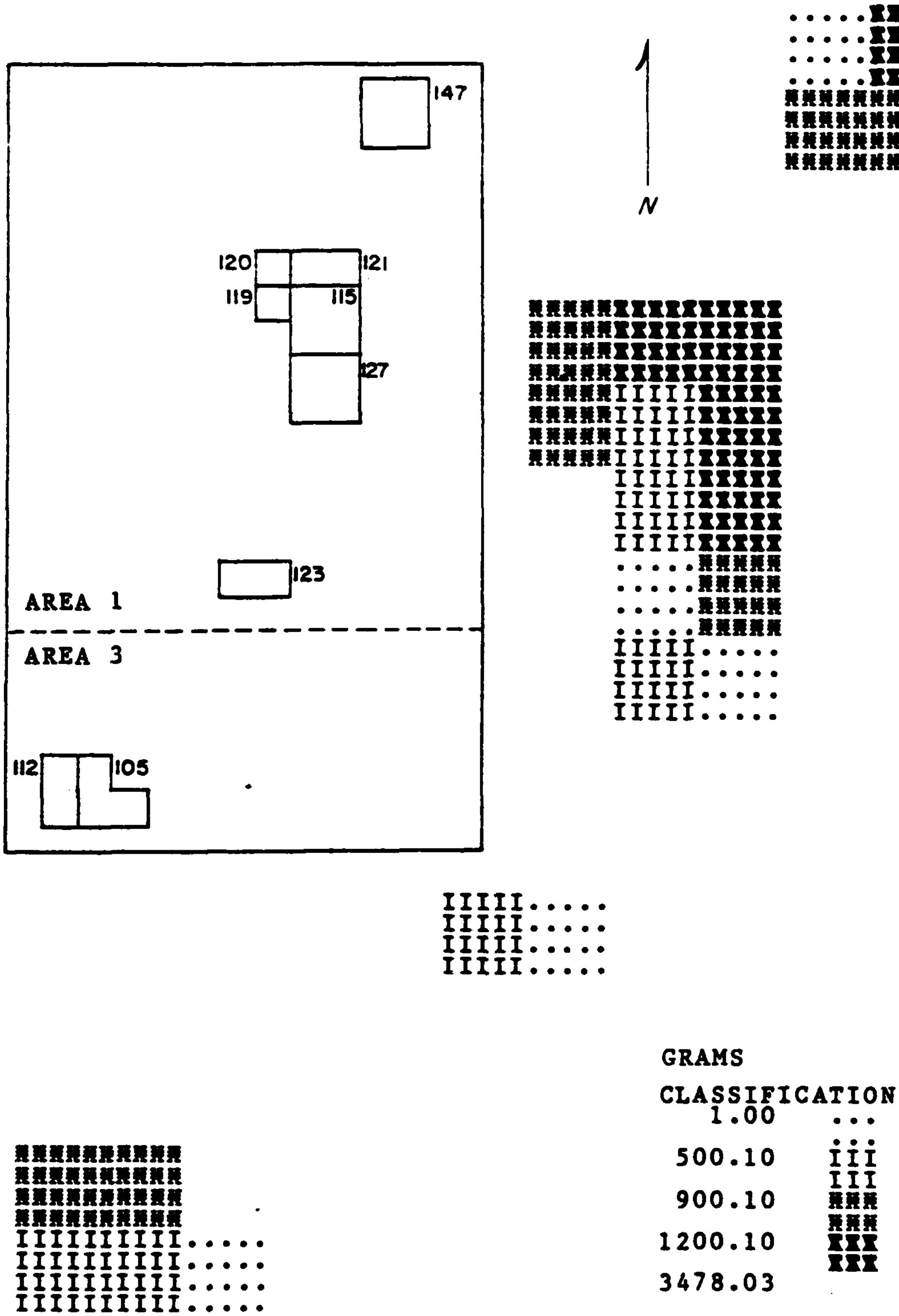
Evidence concerning the distribution of projectile points is extremely sparse for Culture Series 1C and 3C. Series 3C yielded only a Morrow Mountain point and two unidentifiable fragments. Series 1C yielded points from several time periods including Early Archaic bifurcate, side notched and expanded stem styles (1 LeCroy, 1 Pine Tree and 1 Kirk), a Middle Archaic Big Sandy point, and an early Middle Woodland Copena point. While the majority of the points are from earlier phases of the Archaic Period, some admixture of later types occurs. Given the extent of ground disturbance caused by Woodland occupants at the site, occurrence of a Woodland point in Archaic levels is probably fortuitous.

Patterns in Other Artifact Categories

In addition to the chipped stone artifact patterns, others were observed in the distribution of rocks (primarily burned rocks), ground stone and flora.

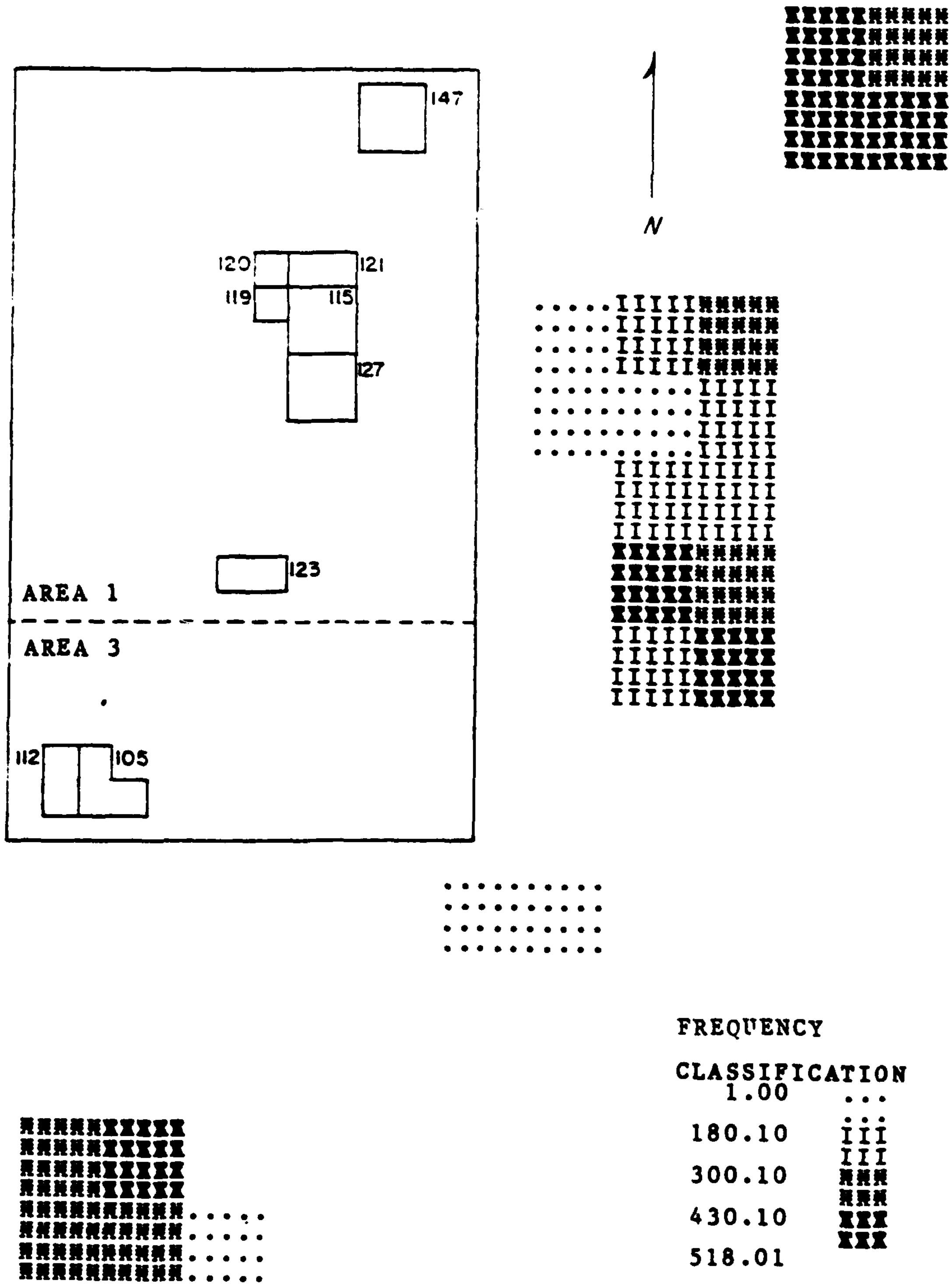
Fire-Cracked and Other Rock

Fire-cracked and other rock (Figures VII-8) exhibit high densities in rather specific areas, including the north portion of Units 105/112, Unit 121, the east half of Unit 115, and the northeast quadrant of Unit 147. Moderately high densities are notable in the southern half of Unit 147, the northeast quadrant of Unit 147 and Units 119 and 120.



Note: Distances between excavation units are not to scale.

Figure VII-8. Distribution of fire-cracked and other rock in Cultural Series 1C and 3C.



Note: Distances between excavation units are not to scale.

Figure VII-9. Distribution of flakes and chunks in Cultural Series 1C and 3C.

The patterning, particularly in the largest block and Unit 147, is suggestive of some partially discernible form defined by denser accumulations around a less dense "center"; however, the complete form is not known because only a sample of the area was excavated.

Flakes and Chunks

The distribution of flakes and chunks (Figure VII-9) in Culture Series 1C and 3C exhibits the highest densities in Units 147, and 105/112. They are associated with the higher density of cores in Unit 147 and Unit 112. Bifaces may be correlated in Unit 105; however, the co-occurrence is less obvious. This distribution suggests that flakes and cores are indicative of primary manufacturing areas but bifaces may be transported elsewhere at different points during the reductive sequence. They are associated with high densities of rock in Unit 147 and Units 105/112 but are more offset from the rock in the larger block. Here they cluster more densely in the southeast and northwest quadrants of Unit 127 and moderately more in the northeast qradrant of Unit 127 and the east half of Unit 121.

Ground Stone Artifacts

In the Archaic levels ground stone varies in type and form. One interesting find worth noting here is a red-stained limestone slab rock in Unit 123. The red elements on the flat surface of the rock have been tentatively identified as hematite. Pitted, battered and abraded stones were also recovered. These data suggest that this small assemblage represents tool manufacturing, tool maintenance and food processing activities indicative of a relatively small camp.

Floral Remains

Table VII-4 presents the distribution of botanical remains by unit. These data suggest that there was a greater reliance on hickory nuts than all other nuts combined, including those unidentified as to species.

Table VII-4. Distribution of Botanical Remains for Cultural Series 1C and 3C.

	Area								
	3C		1C						
	Units								
	105	112	115	121	122*	123	127	147	TOTAL
Black Walnut	2	1	2	1	6	8			20
Hickory Nut	7	10	10	1		10	19	6	63
Butternut		6							6
Juglandaceae		5	2		1		2	7	17
Unknown		1						2	3
Total	9	23	14	2	7	18	21	15	109

*Disturbed Unit

Features

Only two features (19 and 23) are definitely affiliated with the Archaic component. Both of these features were small clusters of rock whose function is undetermined. Both features contained debitage. Feature 23 also included an unidentified expanded stem projectile point fragment, a large pitted stone and three hickory nutshell fragments.

Summary of the Archaic Component (Cultural Series 1C and 3C)

Diagnostic artifacts such as LeCroy, Pine Tree, Big Sandy and Morrow Mountain projectile points indicate occupation(s) from around 6,300 B.C. up to about 2,000 B.C. Two small clusters of rocks (Features 19 and 23) were found in the Archaic deposits of the North Block. Various bifaces, drill fragments, abraded stones, pitted cobbles, grinding slabs, relatively minor amounts of burned rock and data from field notes (indicating a wide range of flakes representing various reductive stages) suggest that this component represents a mixed economy subsistence pattern related to short-term occupations. Undoubtedly, the Archaic populations exploited faunal resources but little bone has been preserved. Floral resources exploited at this site include at least three species of nuts. There is little evidence pointing towards specialization in tool manufacture or in food procurement and processing. Because there is little with which to compare this assemblage in the area, we can only speculate that such activities are probably represented elsewhere along the floodplain. Differential clustering of artifacts do however indicate the presence of Archaic activity areas.

Archaic and Woodland Components in the North Block and Units 105/112

Prior to the presentation of data best representative of the Woodland component at the site (the South Block excavation in Area 2), it is necessary to analyze the Woodland materials from the North Block and Units 105/112. The North Block and Units 105/112 excavations yielded the only clear superposition of Woodland materials over Archaic debris and thus serves as an appropriate data base for discussion of continuity in the human utilization of the site as well as an introduction to the Woodland Period.

The Woodland Component: Cultural Series 1B and 3B

The Woodland component in the North Block, Culture Series 1B, is defined mainly on the basis of Feature 14, Level 2, which spanned Units 115, 119, 120 and 121 and contained limestone tempered ceramic sherds.

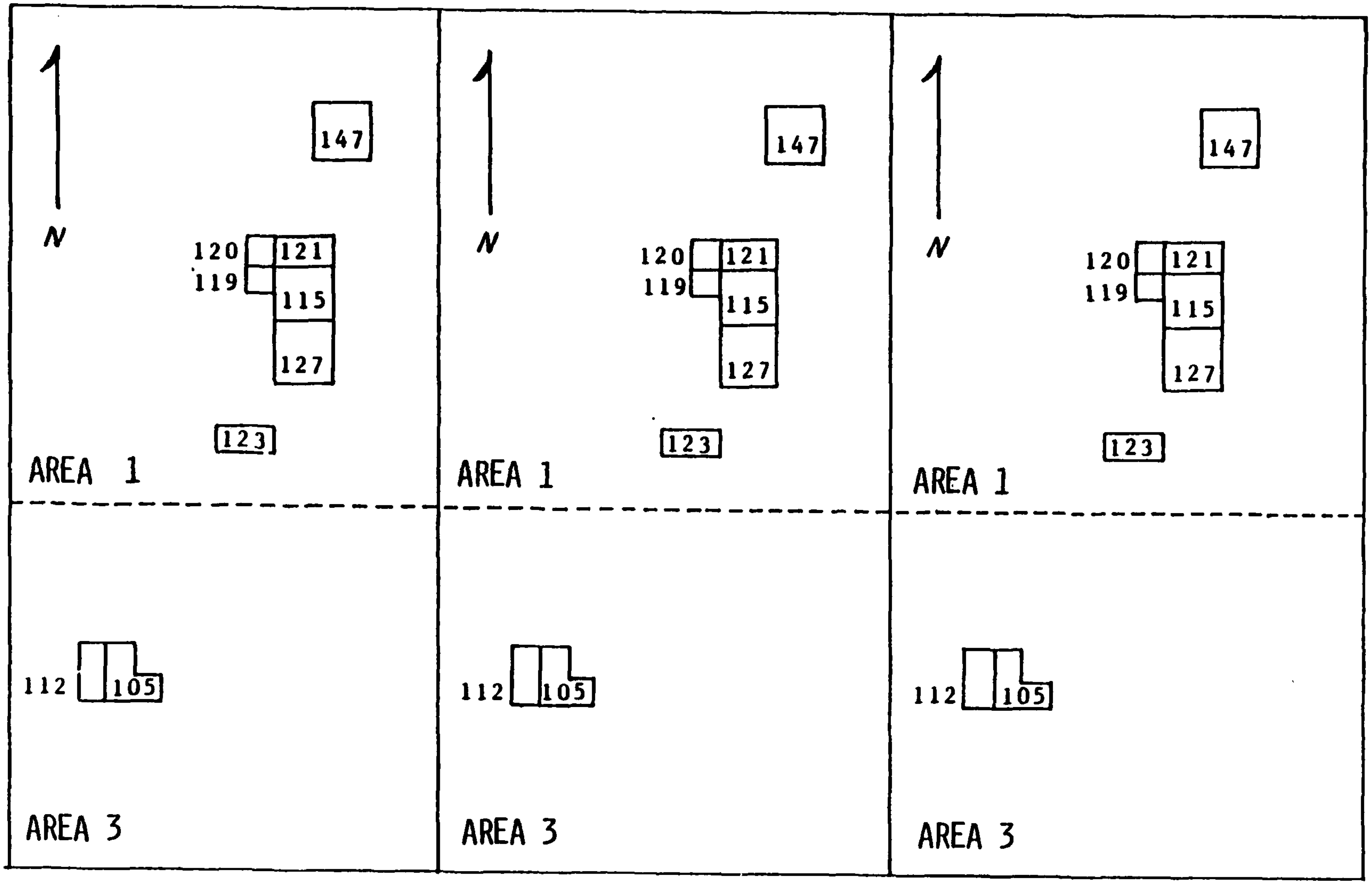
In Units 105/112, Area 3, Culture Series 3B, the Woodland component is defined by several Woodland projectile point types and pottery in Levels 3 and 4.

Comparison of Artifact Categories

With the exception of some data on unmodified ecofacts recovered within each zone, the following data are derived from chipped stone tools and associated debris.

Cores

Figure VII-10 represents the distribution of the Woodland Cultural Series 1B and 3B cores. A concentration is notable in Unit 105 which contains 10 cores within a 3 square meter area. The core density decreases slightly to the north in Units 115, 119, 120, 121, and 127 and increases again in Unit 147. The proportions for these areas are roughly equivalent to core densities in the underlying Archaic levels. While cores are higher in frequency than in the upper Woodland levels, the density distributions are quite similar. Differences in raw frequencies may be attributed



Excavation Units

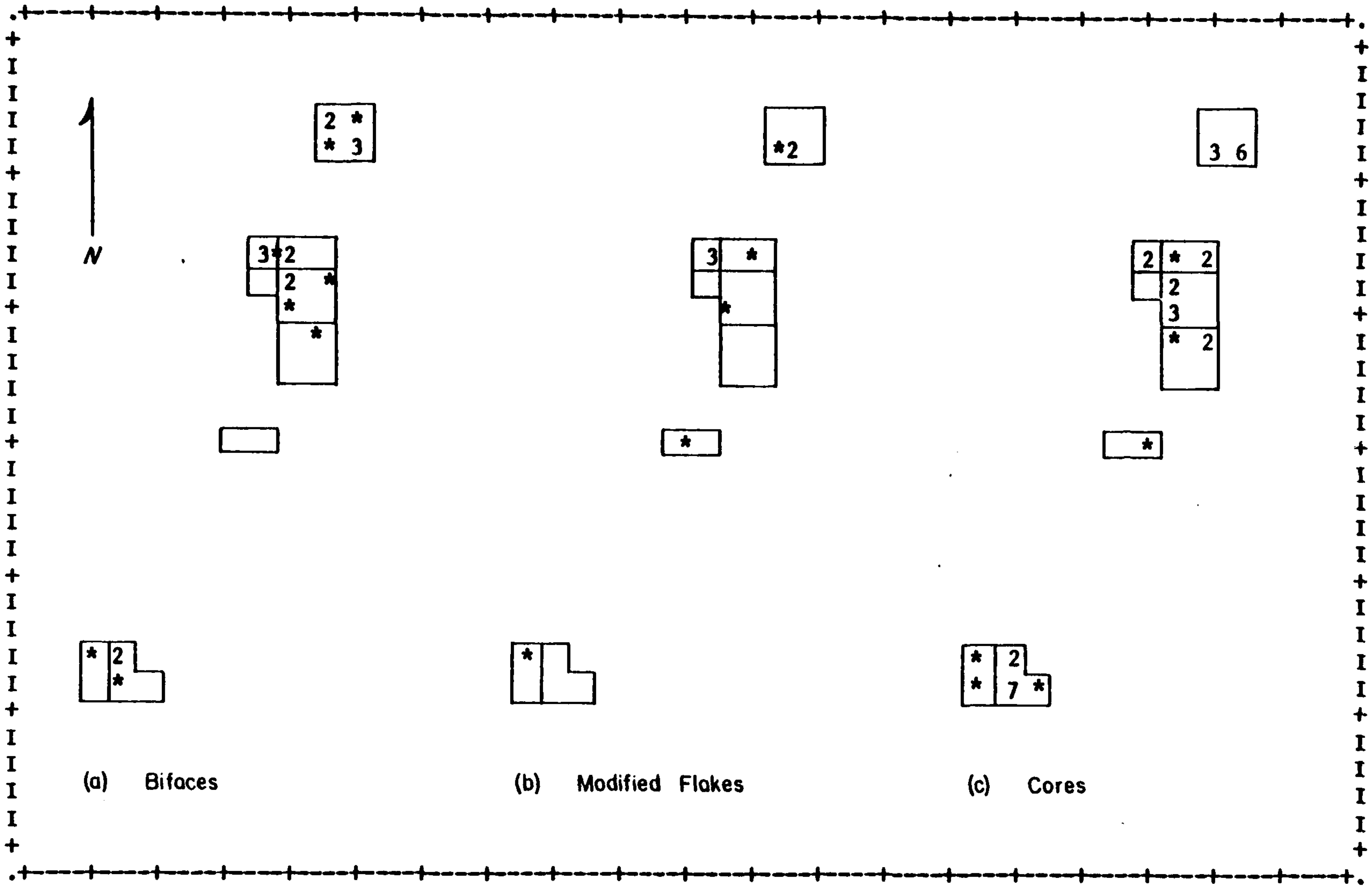


Figure VII-10. Distribution of bifaces, modified flakes and cores in Cultural Series 1B and 3B.

to the longer time span through which Archaic materials were deposited. One may speculate, therefore, that both Archaic and Woodland peoples were reducing cores in the same areas of the North Block.

Chunks and Flakes

The distribution of chunks and unmodified flakes in Culture Series 1B and 3B is presented in Figure VII-11.

Small areas of dense accumulations of flakes are notable in most of Unit 147, and a small area of Unit 112 and predominantly in the northern portion of the excavation block between the two above mentioned areas. This distribution is in contrast to Cultural Series 1C and 3C patterns in which the southern portion (Unit 127) of the excavation block has a greater density of specimens than the northern. These differential distributions are probably reflections of discrete knapping episodes which produce denser clusters in the immediate vicinity of core reduction.

Modified Flakes

Concerning the distribution of modified flakes, the overall spatial pattern observed in Figure VII-7 for the Archaic is roughly similar to the Woodland (Figure VII-10). There are, however, more than twice as many Archaic (n=26) than Woodland (n=10) modified flakes (again probably due to the amount of earth excavated). Because the frequencies are rather low for subcategories of modified flakes, it is difficult to discern any obvious patterns.

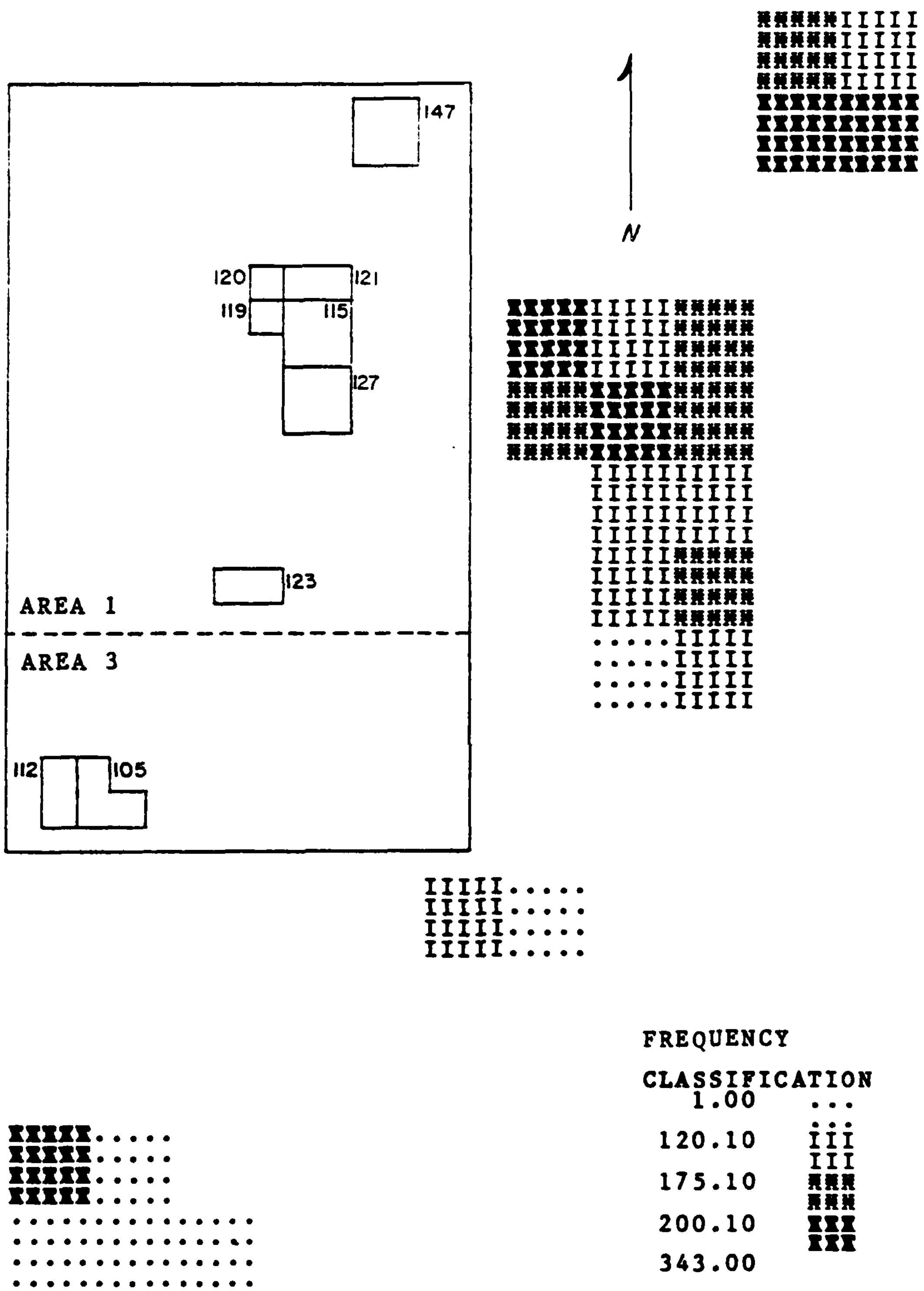
Unifaces

As noted in the previous section there are very few unifaces in the Archaic Cultural Series. Though the total number of these tools is small, the fact that the artifact type is almost completely missing from Cultural Series 1B and 3B is suggestive of possible differences in functional emphasis between the two components.

The function of unifaces is commonly equated with hide processing. One possible difference between the Archaic and Woodland occupations is that hide processing requiring more complex tool forms may have been taking place in the Archaic occupation(s) but not in the Woodland. There may also be differentiated functions for various uniface types which account for the variability in subtype.

Bifaces

Bifaces are not numerous in Cultural Series 1B and 3B. In Unit 147, their distribution is less clustered than for the Archaic component in the same unit, although Woodland



Note: Distances between excavation units are not to scale.

Figure VII-11. Distribution of flakes and chunks in Cultural Series 1B and 3B.

bifaces occur at a slightly higher frequency. In the rest of the North Block, their distribution appears somewhat more tightly clustered than in the Archaic levels. The rather low frequency, however, makes the significance of this possible clustering difficult to assess. One explanation is that Woodland bifaces were not dispersed from their point of origin as much as Archaic specimens.

With regard to reductive stage, Woodland bifaces in Series 1B and 3B fall mostly in Primary Flaking whereas the Archaic bifaces in both Series 1C and 3C include specimens from initial reduction through secondary flaking. The types of bifaces in the Woodland Series 1B and 3B both include triangular and ovate forms although most are unidentifiable fragments. Straight bases, regardless of form, appear to be selected. Archaic bifaces in Series 1C and 3C are similar, except more variable. Straight bases generally predominate, regardless of form. However, round bases are not absent, and, in fact, are of near equivalent frequency in Series 3C. One mav speculate that these biface types (triangular form/straight base; ovate form/round base) constituted preforms for projectile points or other tools in both the Archaic and Woodland occupations but varied in frequency according to need.

Projectile Points

A crosstabulation of projectile points by Cultural Series was produced. However, due to its length it will only be briefly summarized here. In general, a total of four fragment categories and 40 projectile point type categories for the site was manipulated.

Series 1B only contained two types [(Straight Stem 5 and Expanded Stem 15 (Mud Creek)], the former of unknown cultural affiliation, the latter of Late Archaic/Early Woodland, and a few fragments. Series 3B yielded a Palmer, two Adena-like and a Dickson point and several fragments. Excluding the Early Archaic Palmer point, these types are most indicative of the Woodland. The points are indicative of an earlier Woodland date than the pottery discussed below. This rather paltry inventory of points from the Woodland series is in contrast to the larger mixed assemblage of points from Archaic Series 1C and 3C, which, although mostly Early Archaic in date, also incorporated Middle Archaic and early Middle Woodland points as well.

Ceramics

Ceramic sherds were recovered from both Series 1B and 3B. All of the sherds in Series 1B except for one residual shell tempered specimen are tempered with limestone. Most (14 specimens) are plain surfaced; however, single specimens of cord-marked and check-stamped types and three simple-stamped sherds were also recovered. Four of the plain surfaced sherds were recovered from Feature 14; the others are from unit level contexts. Based on the temporal affiliations of these types, the Series 1B occupation falls predominantly within a Middle Woodland McFarland/ Owl Hollow time frame.

Culture Series 3B exhibits a somewhat more variable ceramic assemblage. Most of the sherds (23 identifiable specimens) are limestone tempered and plain surfaced. One simple-stamped, one incised and two check-stamped sherds complete the limestone tempered assemblage. Finally, one quartz tempered sherd with a plain surface was recovered. Cultural affiliation for the quartz tempered sherd is unclear although it may have been brought in from eastern Tennessee. The limestone tempered varieties are also associated with the McFarland/Owl Hollow phenomenon.

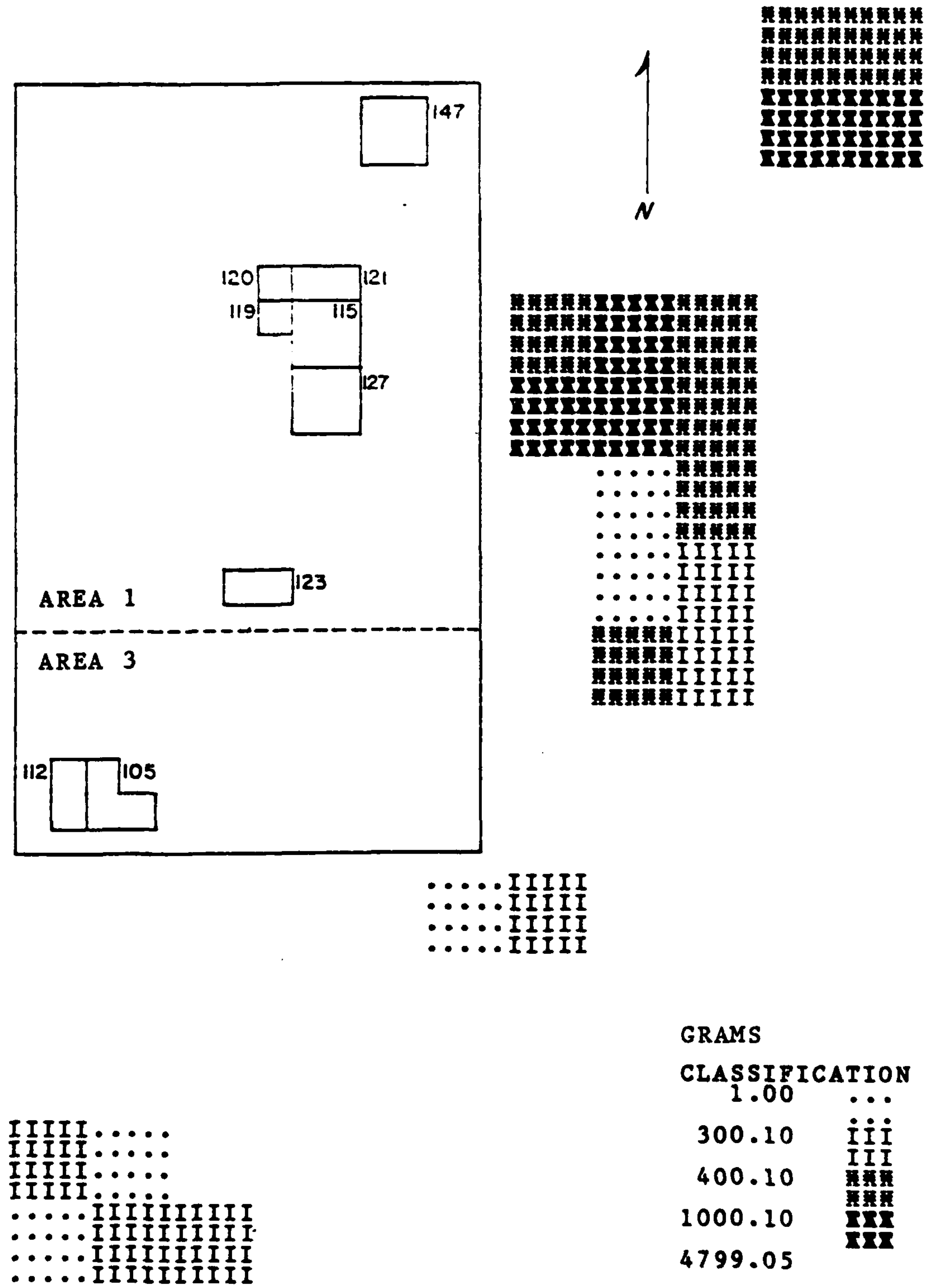
Ceramics were also recovered from the Archaic Series 1C and 3C. Presumably, these represent accidental intrusions in somewhat mixed deposits. With one exception (a Keys Plain sherd in 3C which does not occur as a type in either 1B or 3B), every instance of a ceramic type occurring in Archaic levels has similar sherds occurring stratigraphically above it. While in the field, it was noted that tiny flakes and sherds occurred in tensional cracks between the plowzone and the underlying clay. One may, therefore, speculate that the sherds have been deposited in Archaic levels through the physical processes of shrink and swell. Only limestone tempered sherds occur in Archaic levels.

Unanalyzed Rock

A CMAP of fire-cracked and other rock (Figure VII-12) illustrates dense clusters in Unit 147 and Units 115, 119, 120, and 121. Feature 14 accounts for much of the high density of rock in the latter units. In comparison to the Archaic component, distributions are roughly similar except for a greater density in the Archaic levels of Units 105/112. However, these distributions add additional credence to the idea of continuity in the selection of the locations of general activity between Archaic and Woodland times.

Botanical Remains

Two specimens of black walnut were recovered from Level 2, Unit 115, in the North Block excavation; six specimens of hickory nut were taken from Levels 2 in Units 121 and 123. Feature 14, Units 115, 119, 120 and 121, yielded 18 hickory nut fragments and four specimens of black walnut to complete the botanical inventory for Culture Series 1B, North Block.



Note: Distances between excavation units are not to scale.

Figure VII-12. Distribution of fire-cracked and other rock in Cultural Series 1B and 3B.

It is also worth emphasizing here that two corn kernels were recovered from Level 4 of Unit 112 (Area 3) which lies below a McFarland projectile point in Level 3, of the same unit. There is no indication of stratigraphic disturbance in the unit, thus suggesting that these corn specimens are possibly affiliated with at least an Early Woodland occupation.

In comparing these data with floral information provided in Table VII-4 for the Archaic component from Cultural Series 1C and 3C, it seems that there are some quantitative and qualitative differences between the Woodland and Archaic occupations in terms of the utilization of plants. However, it must be cautioned that although these differences may be real, sampling errors, differential preservation between soil types and the possibility of different activities having been performed in the North Block and Units 105/112 areas through time may in combination account for the observed pattern. Once the entire floral collection from the site has been analyzed, it is believed these issues will be resolved.

Features

A single feature (14) was associated with the Woodland component in this area. It is a shallow, rock-lined pit containing debitage, limestone tempered plain wares, a crinoid fossil, and hickory and black walnut nutshell fragments.

Summary of the Comparisons of Archaic and Woodland Patterns in Cultural Series 1C and 3C

The foregoing has discussed the spatial patterns notable in various artifact categories for the Archaic and Woodland components (1C and 3C; 1B and 3B, respectively) in the North Block and Units 105/112. A general observation to be made is that the Archaic occupation(s) yielded approximately twice as much artifactual data as the Woodland in this area. This proportional difference is related to the amount of deposits excavated for each major time period and the span of time represented by these deposits. Since the Archaic component covers a much longer span of time when compared to the Woodland, caution must be exercised in attaching undue importance to the raw frequencies of artifacts from these deposits. Rather, the emphasis here is on the location of different types of artifacts which may be important for the delineation of differential behavioral modes. A general observation may be made concerning the similarity in relative density of material remains for both components across Area 1; that is, activities are concentrating in the same areas for both components.

A distinction may be discerned between the Archaic and Woodland components in the degree to which artifacts cluster spatially. Generally, Woodland artifacts, both on an individual and collective level, appear to be more tightly clustered whereas Archaic artifact patterns are more dispersed. Several factors may account for this observation. One factor concerns the intensity of occupation. As noted previously, the Archaic deposits span several thousand years and are manifested by relatively numerous artifacts. However, the means by which the occupational remains were deposited affect the nature of the spatial patterning. There is spatial patterning of cultural debris for the Archaic component; however, little segregation or diversification of artifact type is notable. Features are not numerous, as will be seen in the later Woodland occupation. Therefore, the Archaic deposits probably represent a series of sporadic, low intensity, short-term occupations taking place over a long period of time. The functions of these occupations probably varied through time; however, tool manufacture is certainly indicated, along with some hide processing and vegetal food processing/preparation (especially nuts).

The Woodland component (Culture Series 1B and 3B) represents a more intensive series of occupations, and probably involves more specialized activity. Like the Archaic component, some tool manufacture is indicated; however, little evidence of hide processing or vegetal processing is presently discernible. The general lack of features in these Woodland components coupled with the tighter clustering of artifacts may be indicative that this area is peripheral to major occupational loci elsewhere on the site. Given this hypothesis, the patterning observable in Series 1B and 3B may be marginal "edges" or possibly specialized activity areas. Certainly, this area did not yield evidence supporting heavy utilization. This point will be developed later in the concluding section of this chapter with the presentation of data from Cultural Series 2B in Area 2.

Definition of the Woodland Occupation (Cultural Series 2B)

Introduction

The main Woodland component at the Hurricane Branch Site is discussed here. This component was defined in Area 2 along the central western edge of the site and is most strongly represented in Cultural Series 2B, though Cultural Series 2A (plowzone) also contains Woodland artifacts.

As previously mentioned, the dense concentration of honeysuckle in this area did not permit plowing of the entire area; thus, much of the area was not surface collected. Nevertheless, excavation of the plowzone (Cultural Series 2A) in the unplowed areas yielded a relatively low density of artifacts compared to excavated plowzones in Areas 1 and 3. (Data from the excavated plowzone are included here rather than in the earlier surface section of this chapter.) No discernible Archaic component was detected beneath the Woodland Cultural Series in Area 2. Geological data presented in Chapter V shows that Area 2 was a recent sedimentological development which occurred sometime near or after the Archaic Period, thus explaining the absence of these earlier materials.

The following discussion is organized in a fashion similar to data presented for the preceding surface, subsurface and Archaic sections. Once the vertical and horizontal provenience of the excavated areas has been defined, a presentation of the spatial patterning of artifact categories will be provided along with interpretation of the results.

In Area 2 (Culture Series 2A and 2B) Woodland activity was defined by the presence of diagnostic lithic and ceramic artifacts which are itemized in Appendix F. Briefly, those artifacts include most of the unnamed side notched projectile points (that is, 28, 29, 30, and 32) as well as Copena, Copena Triangular, and Candy Creek, along with two earlier types (Morrow Mountain Round Base, and Brewerton Side Notched). Virtually all of the ceramics, with the exception of the shell tempered sherds, are considered Middle Woodland in origin and are used as specific cultural indicators for cross-dating the various cultural features from Cultural Series 2B.

The area under discussion (Area 2, Figure II-2) corresponds to grid coordinates N508 E460 (Unit 154) east to N508 E498, North to N533 E498, west to N533 E462 and along the river south to Unit 154.

The stratigraphy of Area 2 contains a succession of depositional episodes, resulting in four recognizable strata which were discussed in Chapter V under Soil Unit B4. As discussed in Chapter V, this area as heavily alluviated and, except for the far eastern edge, no B horizon was recognized in the excavated sediments. The four strata recognized in this area represent variations within the A Soil Horizon materials.

Figure VII-13 presents the stratigraphy of the largest excavation block in Area 2. Only three of the four strata were recognized in this area. The plowzone, stratigraphically designated here as Stratum I and

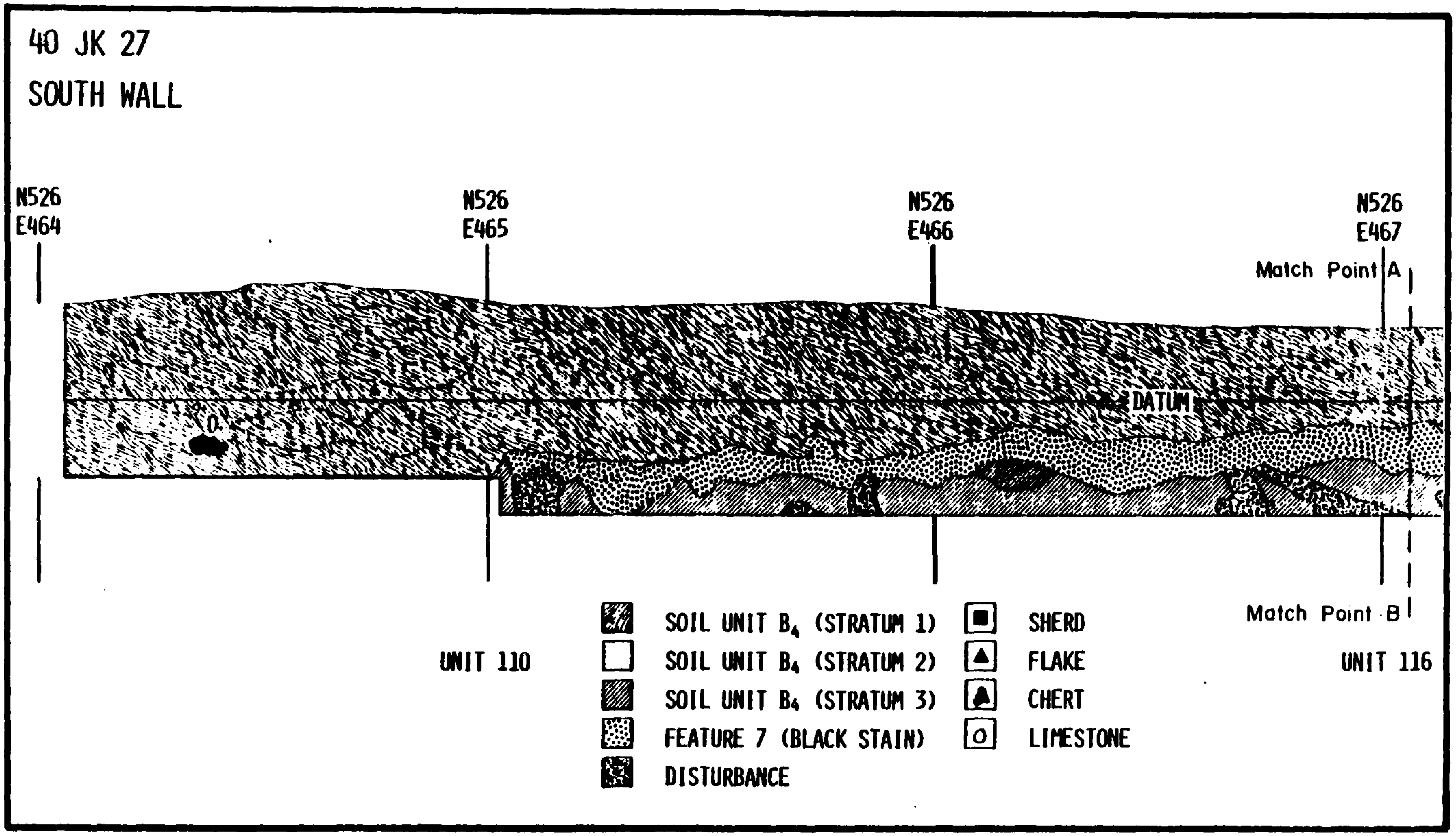


Figure VII-13. Stratigraphy of the largest excavation block in Area 2.

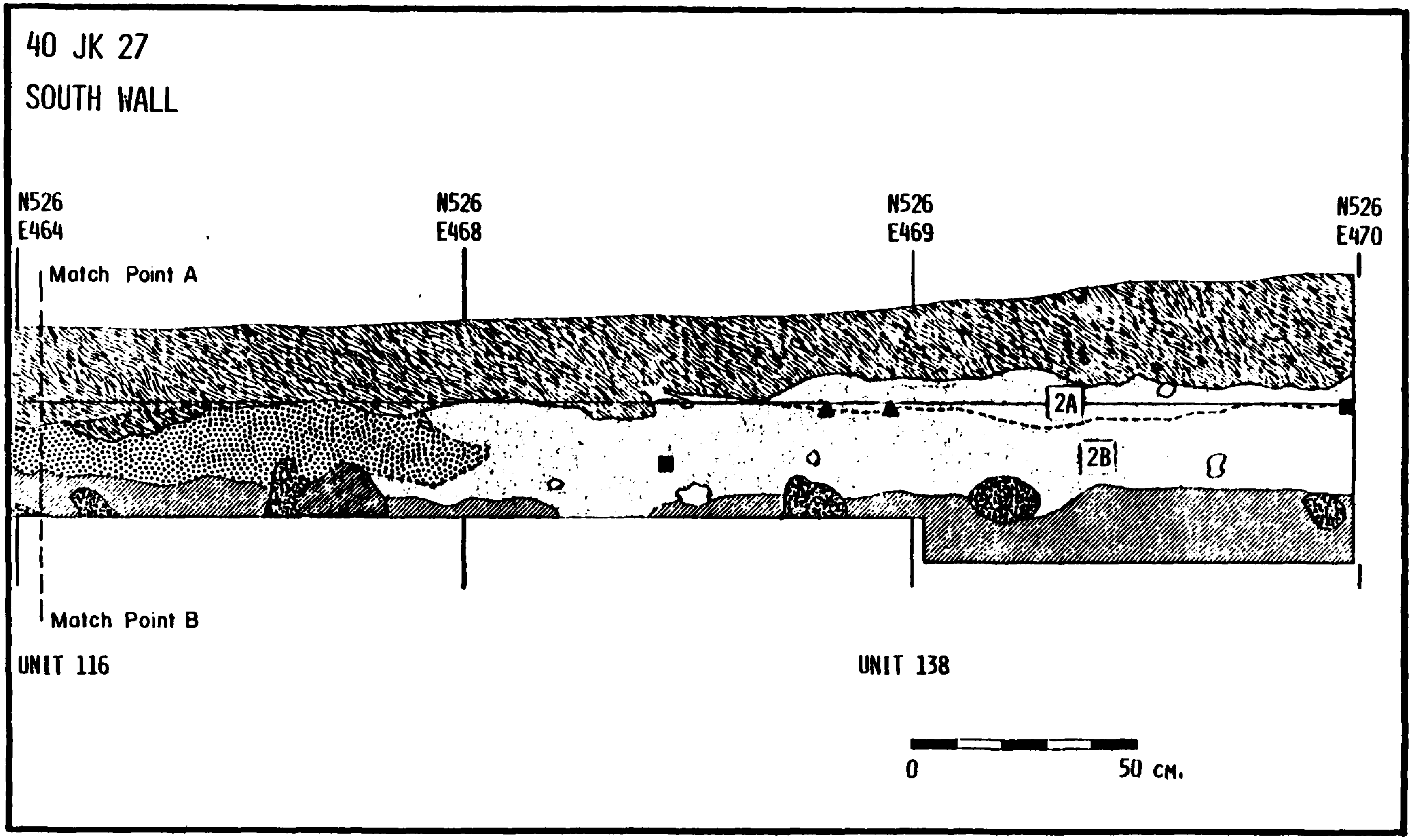


Figure VII-13 continued.

comprising Cultural Series 2A, is generally a dark to very dark yellowish-brown sandy silt loam which is culturally sterile. It is primarily homogenous but exhibits color and compositional variations, particularly around Unit 110 (E465 to E464). There are three such variations. Generally, the plowzone ranges from 25 to 35 cm in thickness and exhibits a distinct contact with the underlying Stratum II (Cultural Series 2B). Culturally, the plowzone yielded mixed deposits which span the Early Archaic to the Mississippian, but are predominately Woodland. The Woodland deposits had been incorporated within the plowzone in the western half of the large excavation block; therefore, density maps presented in this section include plowzone materials in this delimited area.

The underlying Stratum II (Soil Unit B4; see Figure V-5) is generally composed of a dark greyish to blackish-brown silt loam with a occasional reddish tint and light mottling. Some variation within the stratum is noteworthy because it relates to important depositional episodes. Stratum 2A (Figure VII-13) is a yellowish to greyish-brown sandy silt loam representing remnant alluvium which was deposited on the main Woodland occupation contained within Stratum 2B. Stratum 2B is a darker, grayish brown sandy silt loam containing the majority of the undisturbed Woodland deposits. Within this stratum, numerous features such as Feature 7 (a black stain exhibiting very dark, organically rich fill; Figure VII-13), were recorded. As noted above, the Woodland occupation designated as Cultural Series 2B is contained within Stratum II.

The primary traits of this occupation are the several types of closely associated features in the South Block excavation of Area 2. Associated with such features as black stains, fired areas, pits, post holes, bone concentrations, rock concentrations and burials are a variety and relatively heavy density of artifactual material and botanical remains, some of which are diagnostic traits of the Woodland Period, specifically the Middle Woodland. (Much of the color and compositional variation among Soil Units in Strata 1 and 2 is due to the presence of these organically rich features.) Stratum 3 (Cultural Series 2C) is a grayish to dark-yellowish-brown sandy silt loam. Its moisture content is greater than Stratum 1 and approximately equivalent to that of Stratum 2. In the extreme western units (138, 116 and 110; Figure VII-13), there is evidence for considerable bioturbation. Where exposed, this zone varies from about 5 to 35 cm in thickness. In all areas except Units 126 and 142, the deposits comprising Stratum 3 are culturally sterile.

A fourth stratum was also recognized but is not presented in graphic form. This deposit is a weathered horizon compound of finely laminated, compact fine sand which was also culturally sterile.

The following discussion will focus on Cultural Series 2B which constitutes the most extensive intact Woodland deposits on the site. The plowzone above this deposit is termed Cultural Series 2A. In general, the patterns of artifact distribution noted for Series 2B are mirrored in the plowzone although artifact density is less. Artifact categories associated with Series 2A are presented in Appendix F; an examination of Table F-3 reveals the similarities such that Series 2A may be considered a subset of 2B. Therefore, discussion of specific artifact categories for Series 2A will not be presented.

Spatial Analysis of Artifact Categories

Prior to discussion of the internal patterning and association of artifact categories from Cultural Series 2B, a brief synopsis of the types of features and their pattern of association in the South Block excavation are first presented. An overall illustration of Cultural Series 2B features is presented in Figure VII-14 while portions showing specific areas in greater detail are presented in Figures VII-15 through VII-18.

Feature Patterns

One of the first patterns observed during the subsurface testing phase of fieldwork was the alignment of post holes in the South Block. These features (Figure VII-15) appear to represent the remnants of a semi-rectangular architectural structure, probably domestic in function. This structure is composed, counterclockwise, of Features, 33, 32, 13a, 13b, 5b, 11a, 11b, 12, 17, 12 and 21 (See Chapter VI). Within the structure is a fired area (Feature 10) which may have served as a hearth. Located along the west wall were Features 3 and 5c, infant burials. The position of these burials on the site is important because a similar pattern of child burial within a structure is characteristic of several Middle Mississippian villages in the Lower Cumberland River Valley, particularly at Tinsley Hill, the Fewkes Group and Goheen. Since no Mississippian artifacts were associated with the structure and the burials, the data suggest that such a burial practice originated in the Middle to Late Woodland Period in the Middle Cumberland River Valley.

In addition to the postmolds identified as Structure 1, at least seven others were identified (Features 45, Unit 139 (Figure VII-15); 46, Unit 144; 47, Unit 140 (Figure VII-15); 52 and 53, Unit 134 (Figure VII-18). Although none of these other postholes were spatially clustered to suggest the

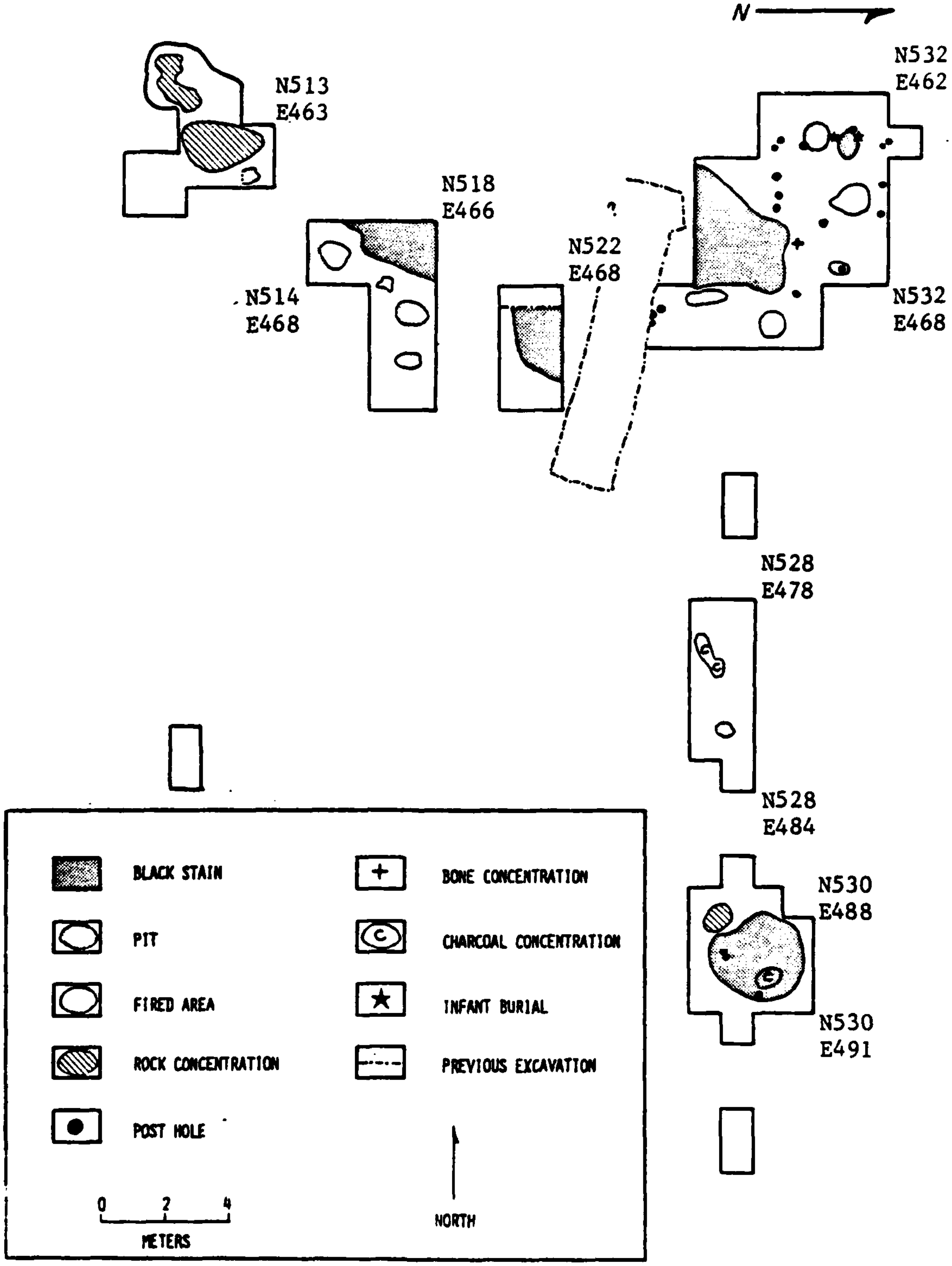
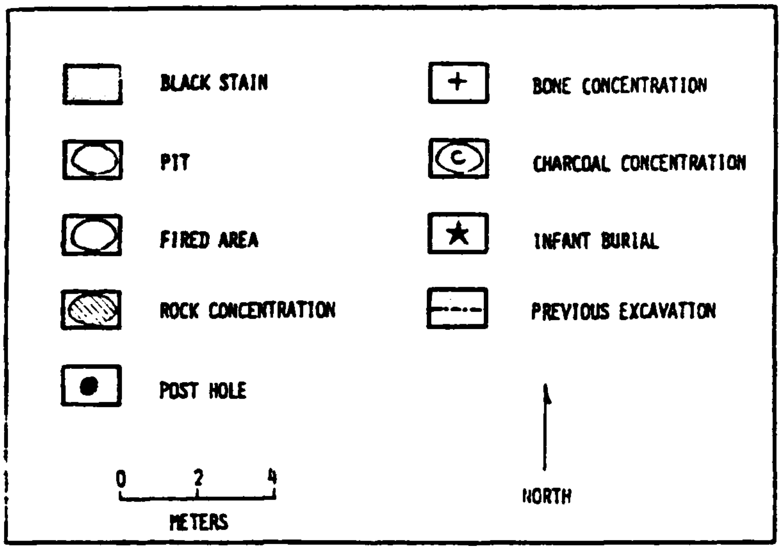


Figure VII-14. Distribution and type of features in Area 2, South Block, Cultural Series 2B.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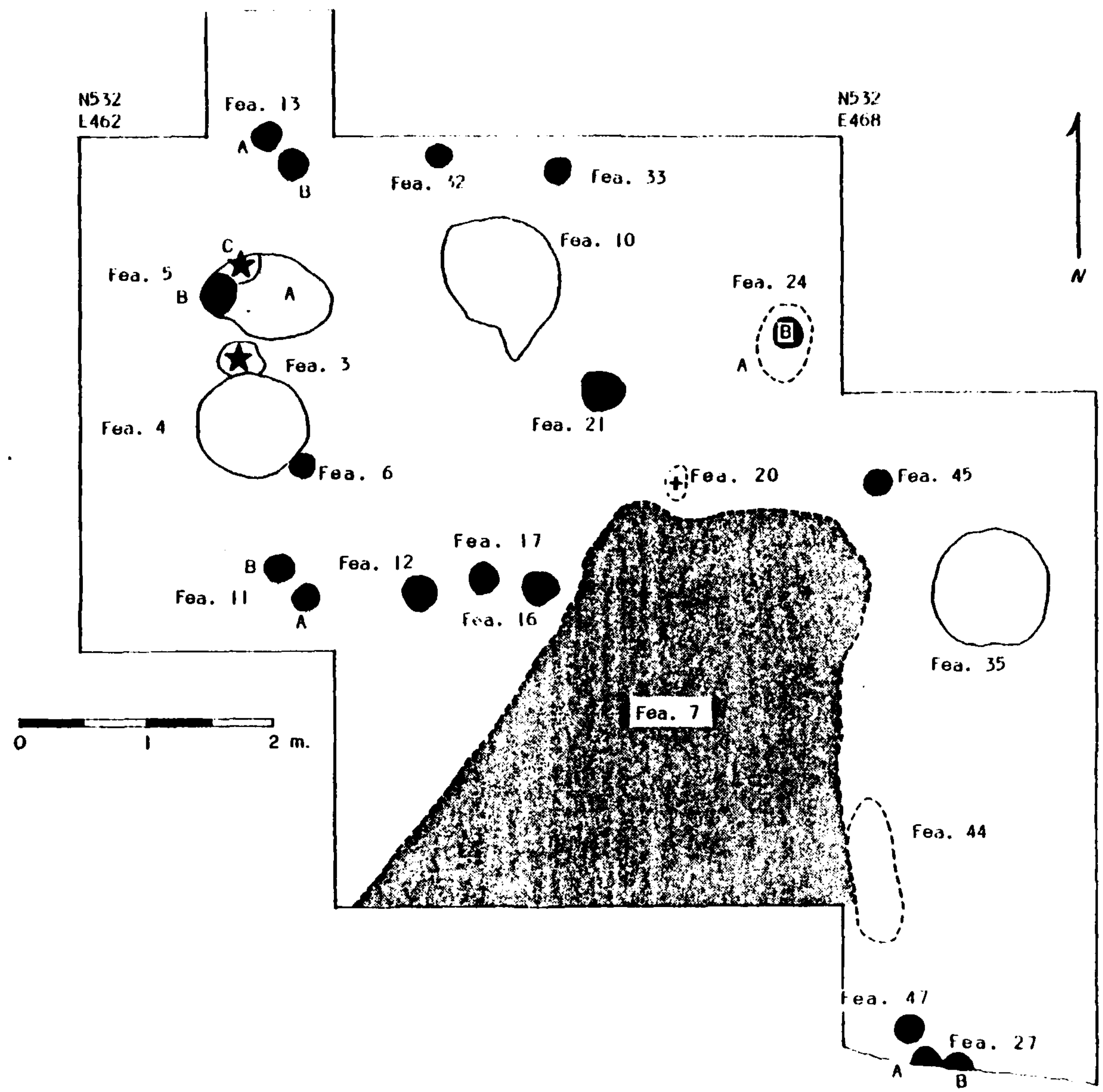
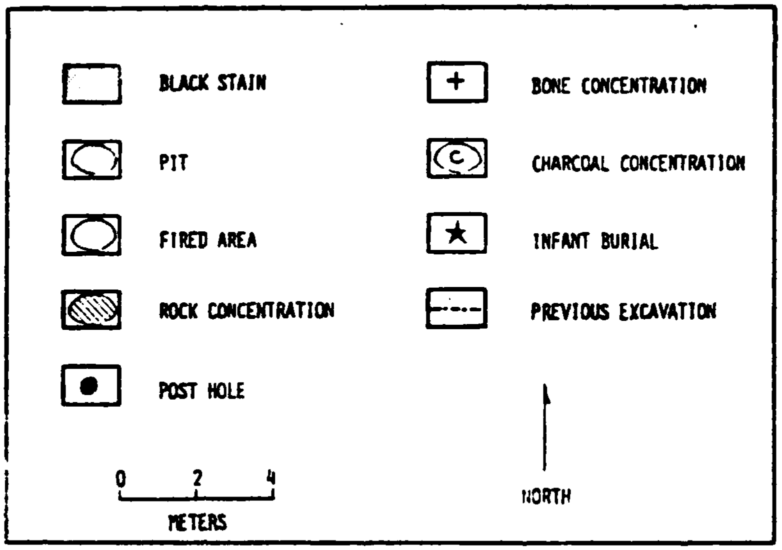


Figure VII-15. Enlargement of Figure VII-14 showing various features.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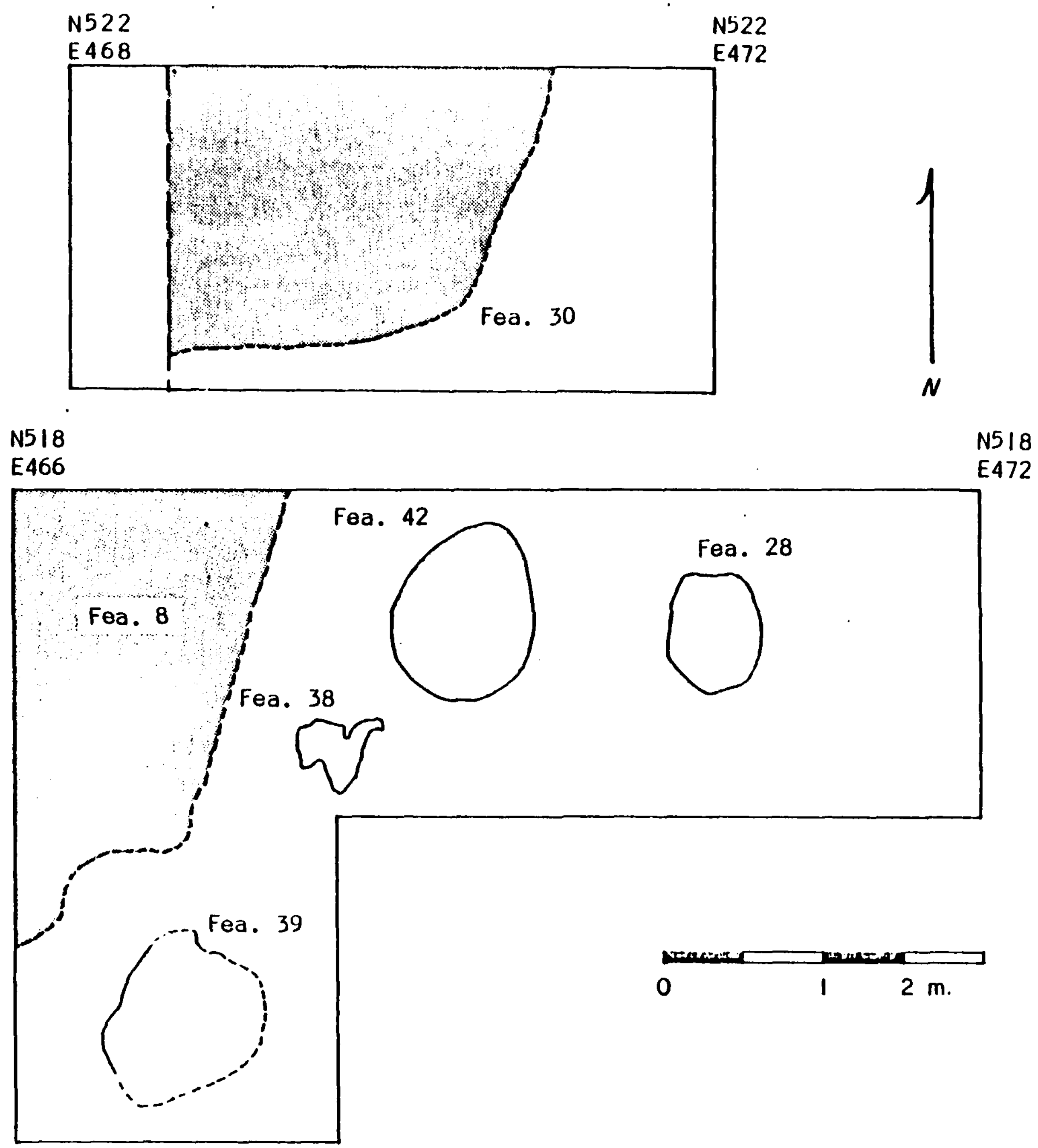
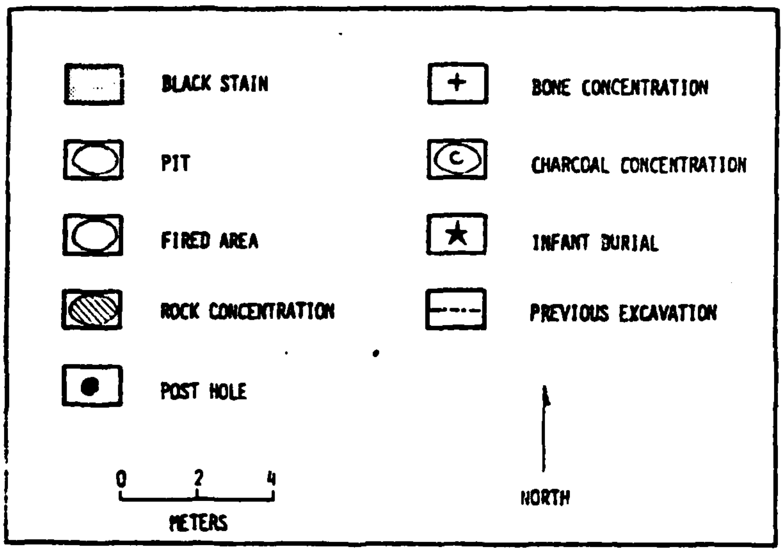


Figure VII-16. Enlargement of Figure VII-14 showing various features.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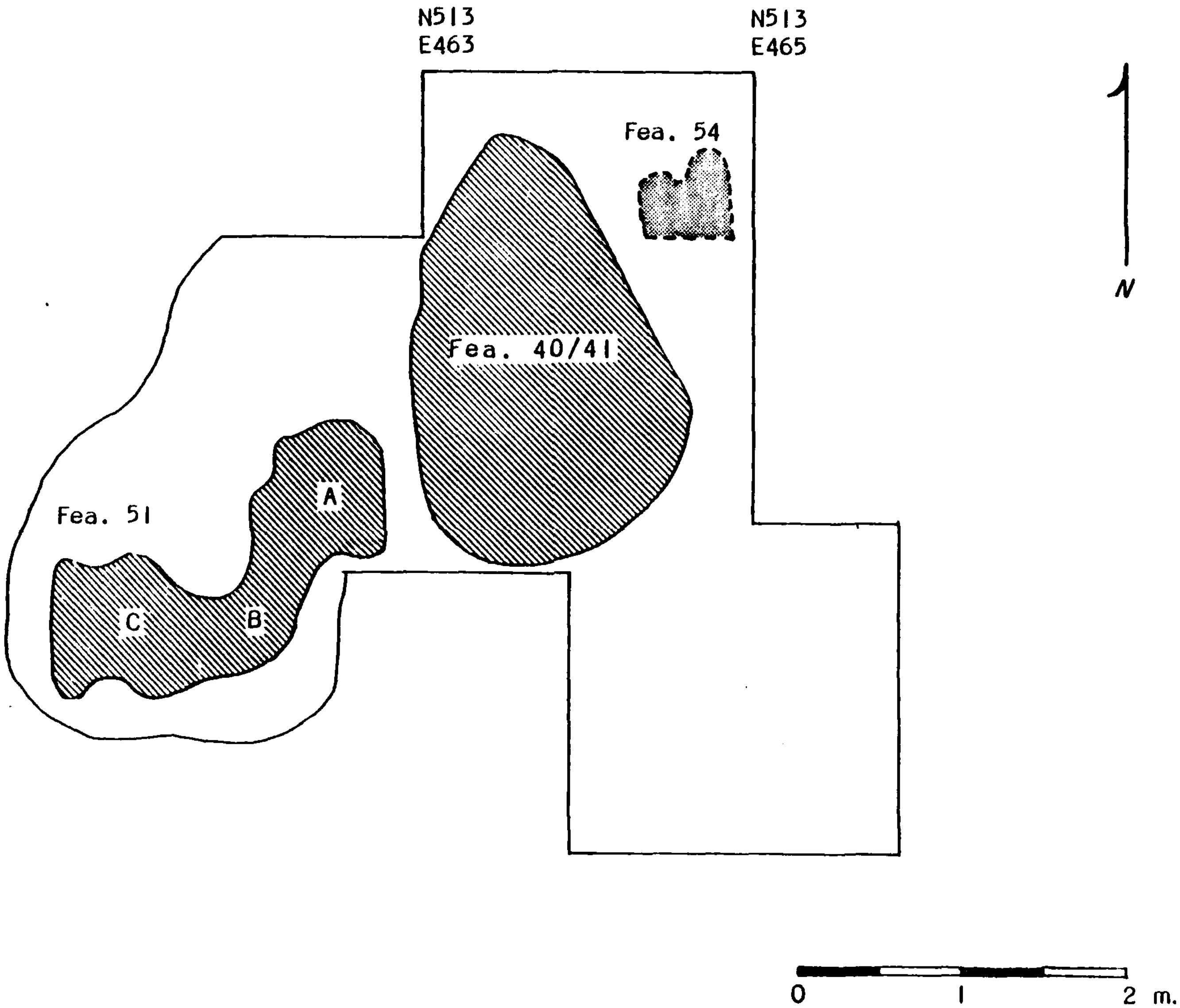
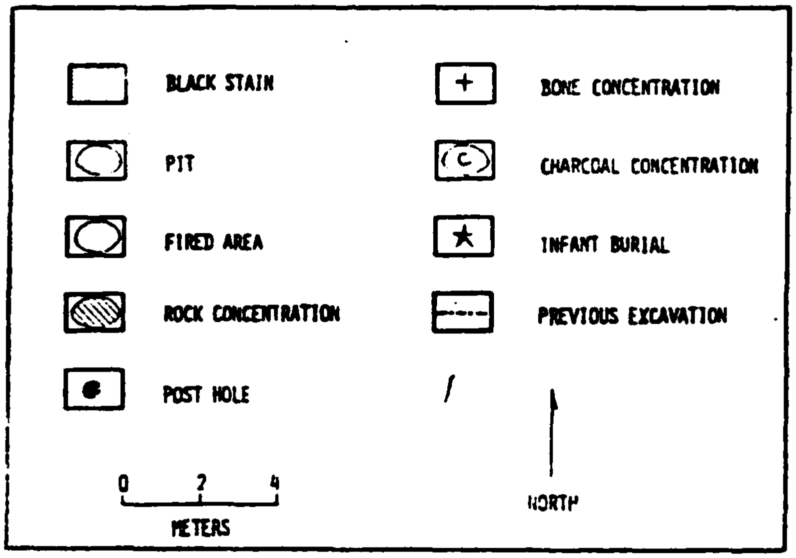


Figure VII-17. Enlargement of Figure VII-14 showing various features.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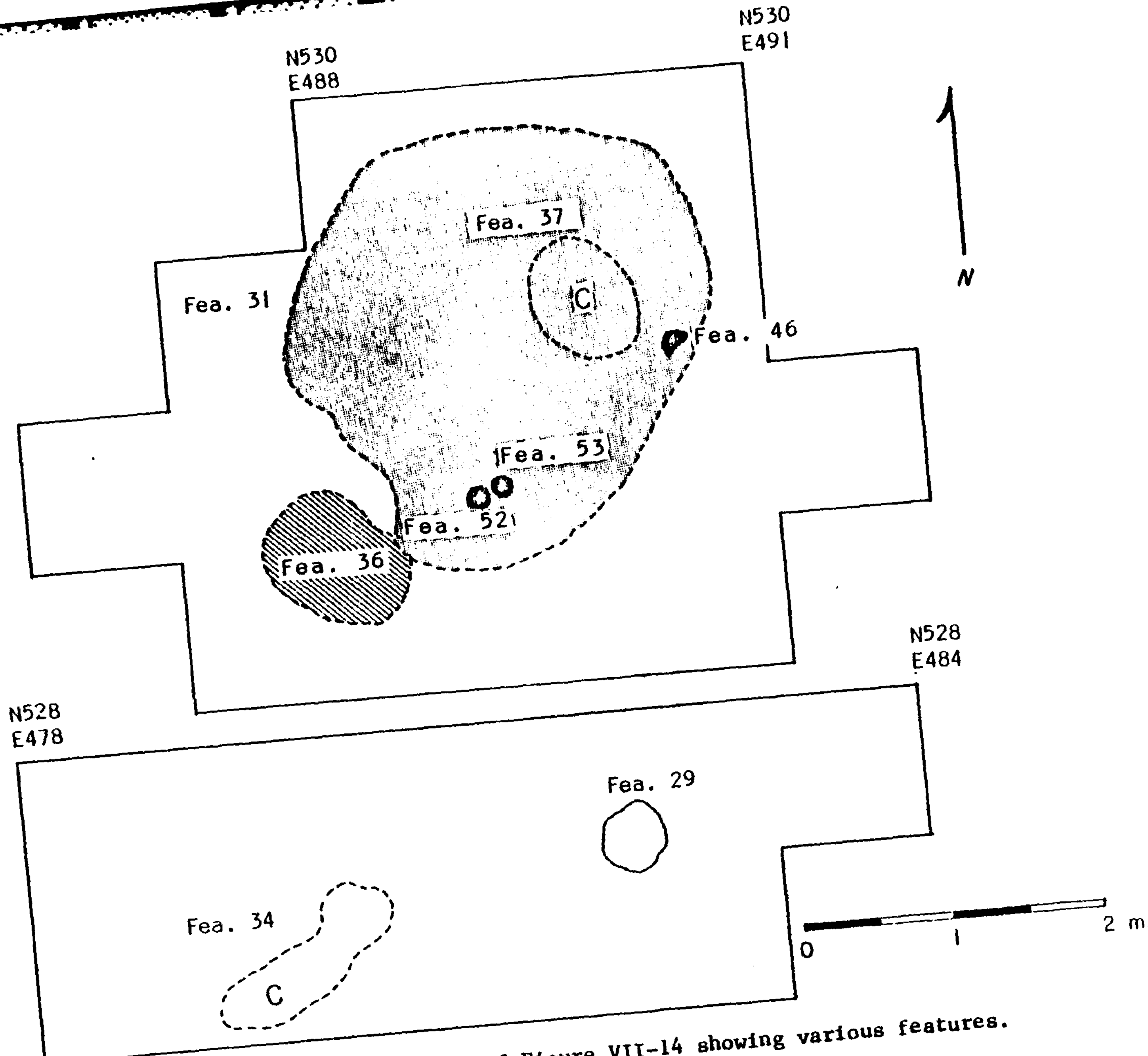
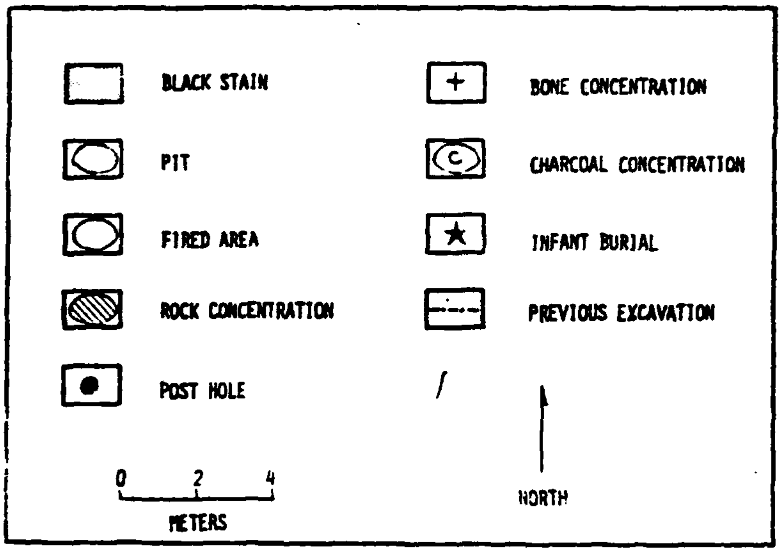


Figure VII-18. Enlargement of Figure VII-14 showing various features.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presence of another structure at the site, it is highly probable that they formed part of minor architectural features, such as food racks, drying poles, and so on in these units. No "living surface" was defined within the structure other than the presence of features. The test trench that cut through the structure and alterations due to plowing had disturbed the area. The postholes and features that defined this structure were all detected at the base of the plowzone. Because of this disturbance, artifacts from the plowzone were included in the data set for spatial analysis for this area.

The black stain features [7 (Units 110, 111, 113, 116)(Figure VII-15), 8 (Units 133 and 148)(Figure VII-16), 30 (Units 129 and 137)(Figure VII-16) and 31 (Units 109, 125, 134, 143, 144, 146)(Figure VII-18)] generally contained little charcoal and no discernible ash and are quite distinct from the surrounding midden. Only Feature 31 contained any superimposed features. Somewhat surprisingly, however, the black stains are not composed entirely of the same types of debris, though they may have had a similar function. Some of the debris retrieved from these stains may be secondary deposits resulting from later activities which generated such materials as chippage waste and broken ceramic pots which were abandoned in the area of the stains.

Features 7, 8 and 30 (Figures VII-15 and VII-16) are not part of a single large black stain feature, extending from north to south. The largest and northernmost unit block excavation in the South Block area was comprised of Units 102, 107, 108, 110, 111, 114, 113, 116, 118, 138, 139 and 140. The southern end of this block was bordered by a sunken backhoe trench cut in 1979 during the earlier subsurface testing phases at the site. Such a disturbance did not permit extensive and continuous excavation to the south. Remnants of two black stains, Features 8 and 30, appeared in Units 133 and 148 and Units 129 and 137, respectively, presenting a pattern that seems to represent different outlying areas of one continuous black stain that extends from north to south. This was not the case, however, as hand-core drilling and shovel probes in unexcavated areas between the three separate unit blocks containing the three black stains showed that these features were not connected but independent of one another and amorphous in shape, a patterned form similar to Feature 31, the black stain in Units 134, 143, 144 and 146.

Numerous pits (Features 4, 5, 29, 39, 42 and 54) (Figures VII-15, VII-16 and VII-17) were recovered but exhibited no discernible pattern other than their location outside the black stain features (Figure VII-14). Two pits, Features 4 and 5, were located inside the structure, possibly representing a storage area. Fired areas (Features 10, 28, 35 and 38) (Figures VII-15 and VII-16) were also outside of the black stains but in close proximity to pits and the fringes of the stains. Rock concentrations (Features 36, 40 and 51) (Figures VII-17 and VII-18) tended not to be heavily clustered with other features. The two larger concentrations (40 and 51) are associated but located south of the black stain areas (Figures VII-14 and VII-17).

It should also be noted that burned rock is not a major constituent of the black stains, although moderate amounts of fire-cracked rock were recovered from Features 7, 8 and 30. This pattern may indicate that these stains functioned as other than cooking areas or hearths. Three postholes (Features 46, 52 and 53) are associated with Feature 31 (Figure VII-18), a black stain. They were all found beneath the feature. Such a pattern generally suggests that black stain areas were uni-functional, with other kinds of activities, such as pit storage and food processing, taking place around them. Also, there is an absence of ash or charcoal and very little wood and nut remnants in the black stains. The color and organic composition of these black stains are possibly representative of rotting compost-like botanical debris. No substantial faunal remains were recovered. Thus, it is suggested that these stains are dumps which formed an accumulation of compost. It is not known whether these stains represent one compost episode or re-use of the site over several seasons or years. However, we may infer from the patterned distribution of other types of features around the black stains that much of the South Block area represents a synchronic event since few features are superimposed on one another; representing, perhaps the activities of no more than one generation or several sequentially interrelated episodes. Further light will be shed on the function of these black stains and the patterning of associated artifacts in the following analyses of other cultural materials types.

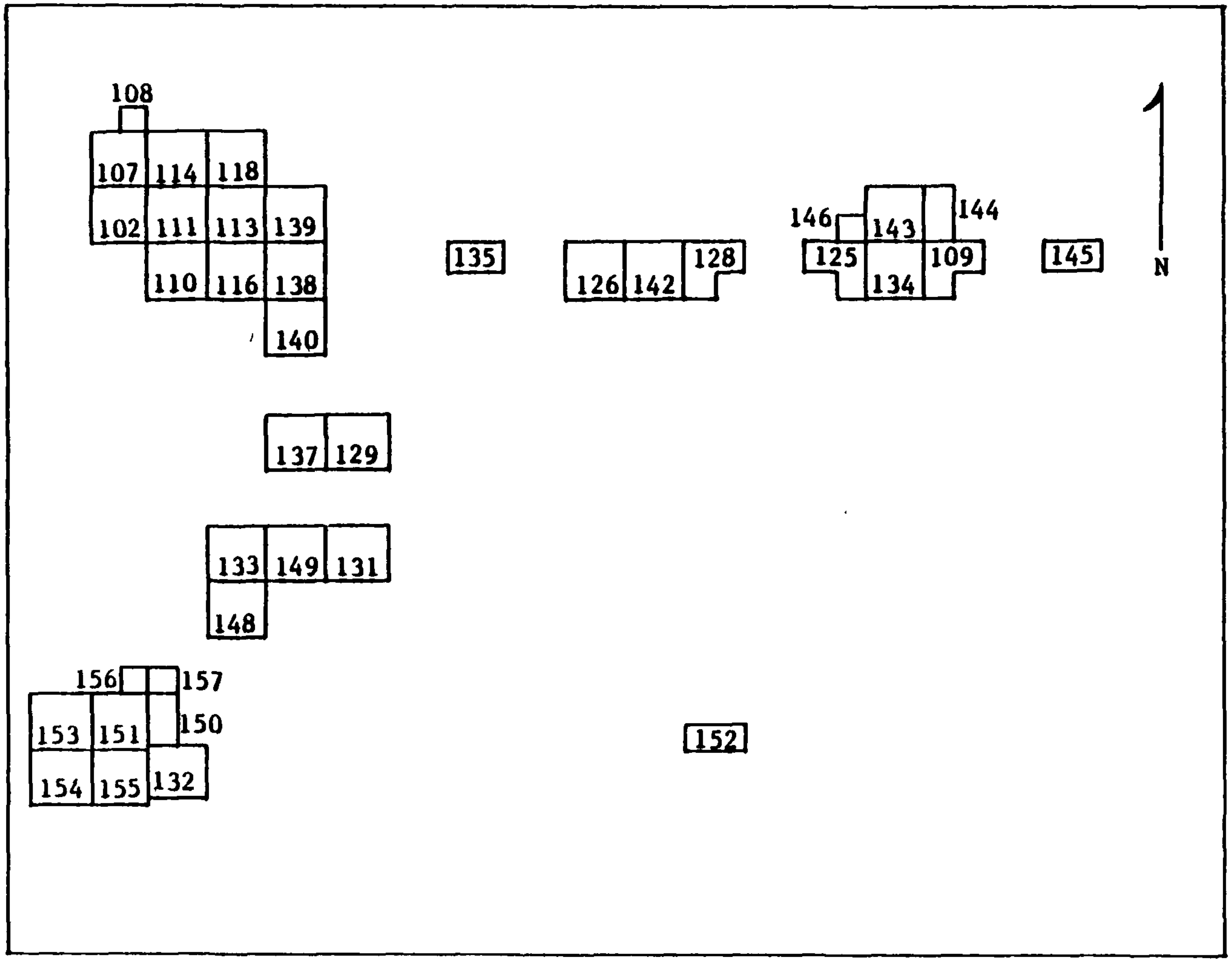
Lastly, it should be noted that in the following discussions all excavated areas outside the black stain features and the structure are referred to as general midden deposits.

Patterns of Chipped Stone Usage

The most prolific data set associated with the Woodland occupation (Cultural Series 2B) is that of chipped stone. Artifact types within this general category include cores, flakes and chunks, modified flakes and unifaces, bifaces, and projectile points.

Cores

The distribution of normal cores is illustrated in Figure VII-19. These artifacts rarely occur in features but are most frequent in general midden contexts. Of the 43



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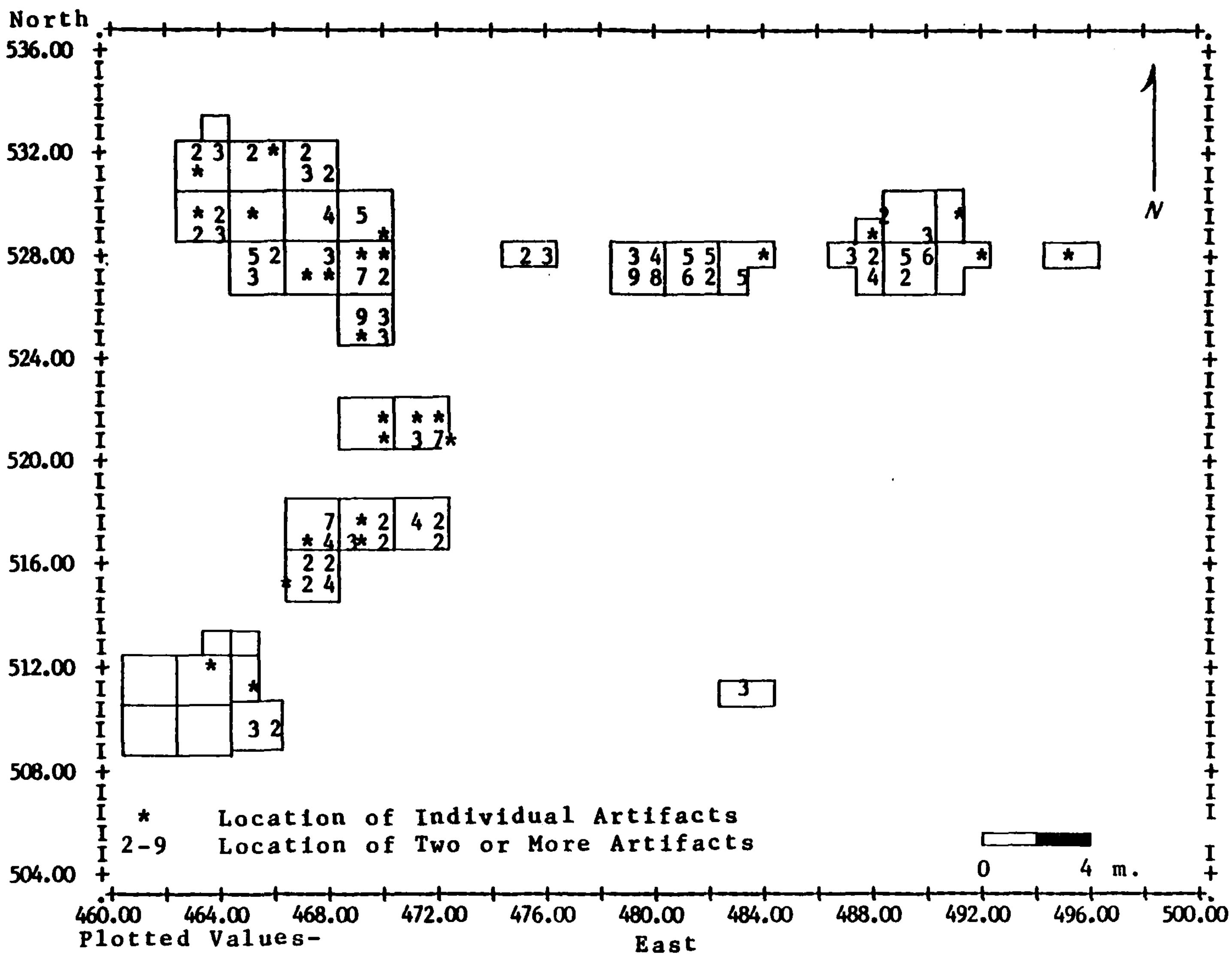


Figure VII-19. Distribution of normal cores in Cultural Series 2B.

Woodland cultural features recognized at the site, cores occurred in only eight of them. Single examples were recovered from a postmold (Feature 52), a rock concentration (Feature 40), and a black stain (Feature 31). The other black stains (Features 7,8 and 30), a pit (Feature 42), and a rock concentration (Feature 36) contained 6, 13, 5, 3 and 3 examples, respectively. Cores occur most frequently around the southeastern edge of Feature 8 (Units 133, 148 and 149) and in Units 126, 128 and 142. Another rather moderate concentration is notable in Units 138, 139 and 140 east of Feature 7 (a black stain).

Aborted cores are few in number (n=15) compared to the normal cores (n=205) indicating perhaps that most cores were "tested" before being brought onto the site. With so few aborted cores recovered, it is difficult to suggest any patterning.

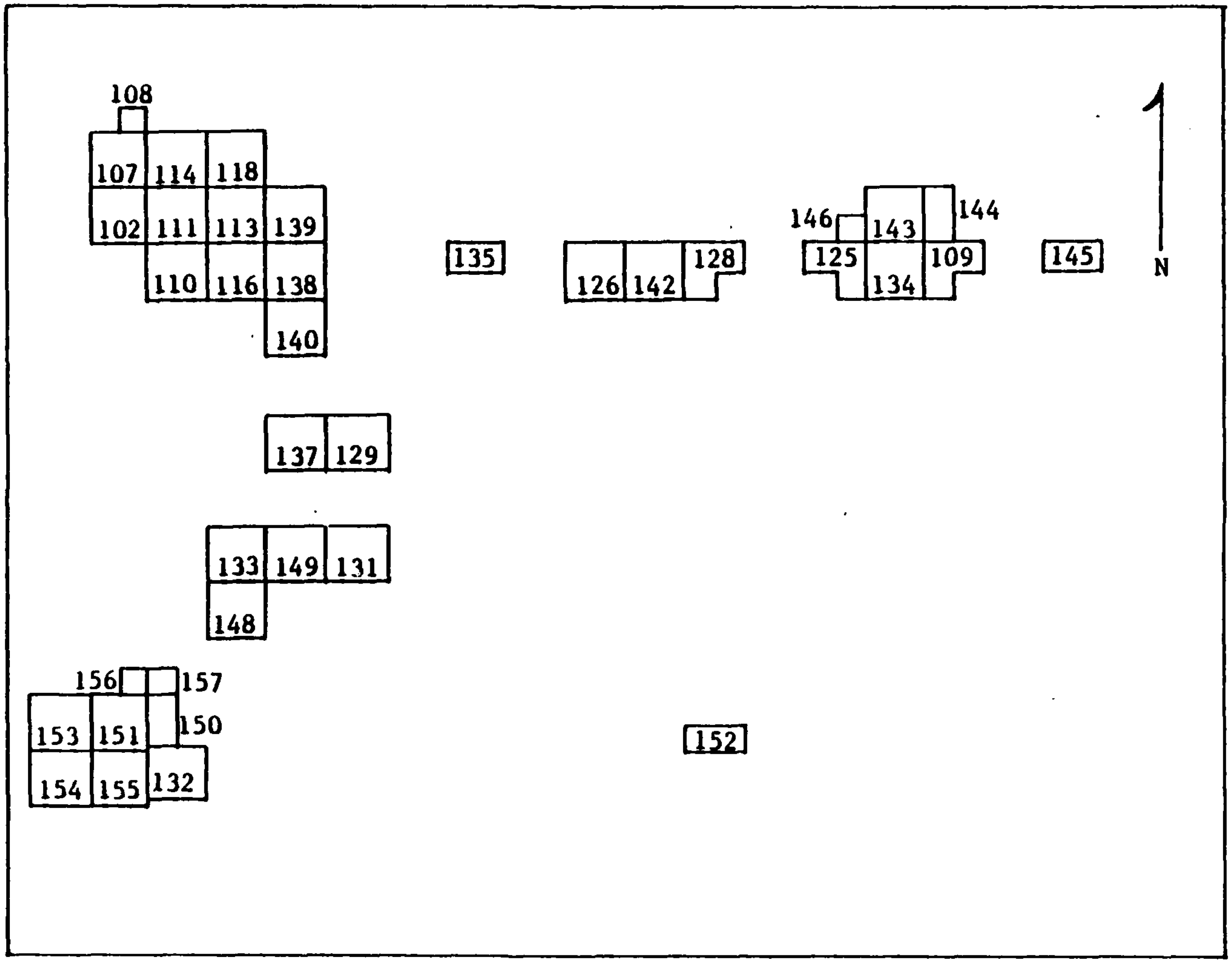
Flakes and Chunks

The distribution of flakes indicates the heaviest concentration in Units 128, 129 and 142 with spot concentrations in the other unit blocks (Figure VII-20). Flakes occur in both feature and general midden contexts. A variable but moderate to heavy concentration is notable in and around Unit 134. Feature 30 (a black stain) also contains a moderately high density. The other black stains have a low flake density. The inside of the structure also appears relatively "clean" except for a small area near Feature 4. Features 40 and its environs exhibit very low flake densities.

The distribution of chunks should more or less approximate the flake distribution if chunks are correctly interpreted as manufacturing debris. The distribution (Figure VII-21) is generally similar with variations being attributable to the lower frequency of chunks from the site, and the proportionally less frequent generation of chunks as compared to flakes during the manufacturing process. A further factor which may account for slight variations in spatial distributions is the reductive stages at which chunks are produced. A major problem in analyzing chunks is the difficulty in assigning them to a particular reductive stage. One might approach this problem indirectly by analyzing the flakes associated with chunks by their reductive stage. Since no debitage analysis of this type was carried out the observed variability in chunk distribution is conjectural. However, their general co-occurrence wth flakes and cores tends to support their role in the manufacturing process.

One pattern worth noting is the rather low frequencies of flakes in Cultural Series 2B relative to cores. Only 577 flakes were recovered from 2B yet 230 cores occur. This

FIGURE VII-20



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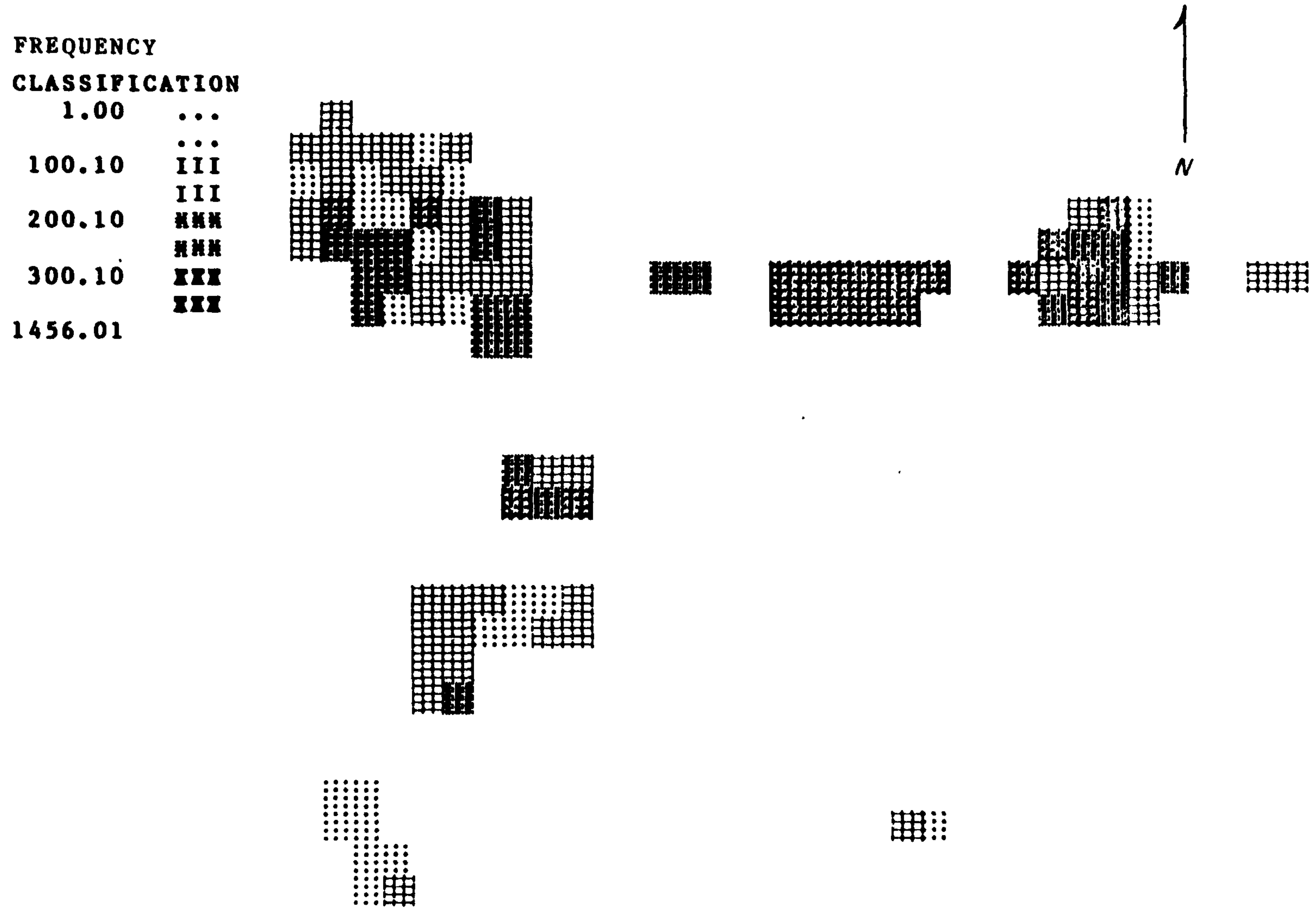
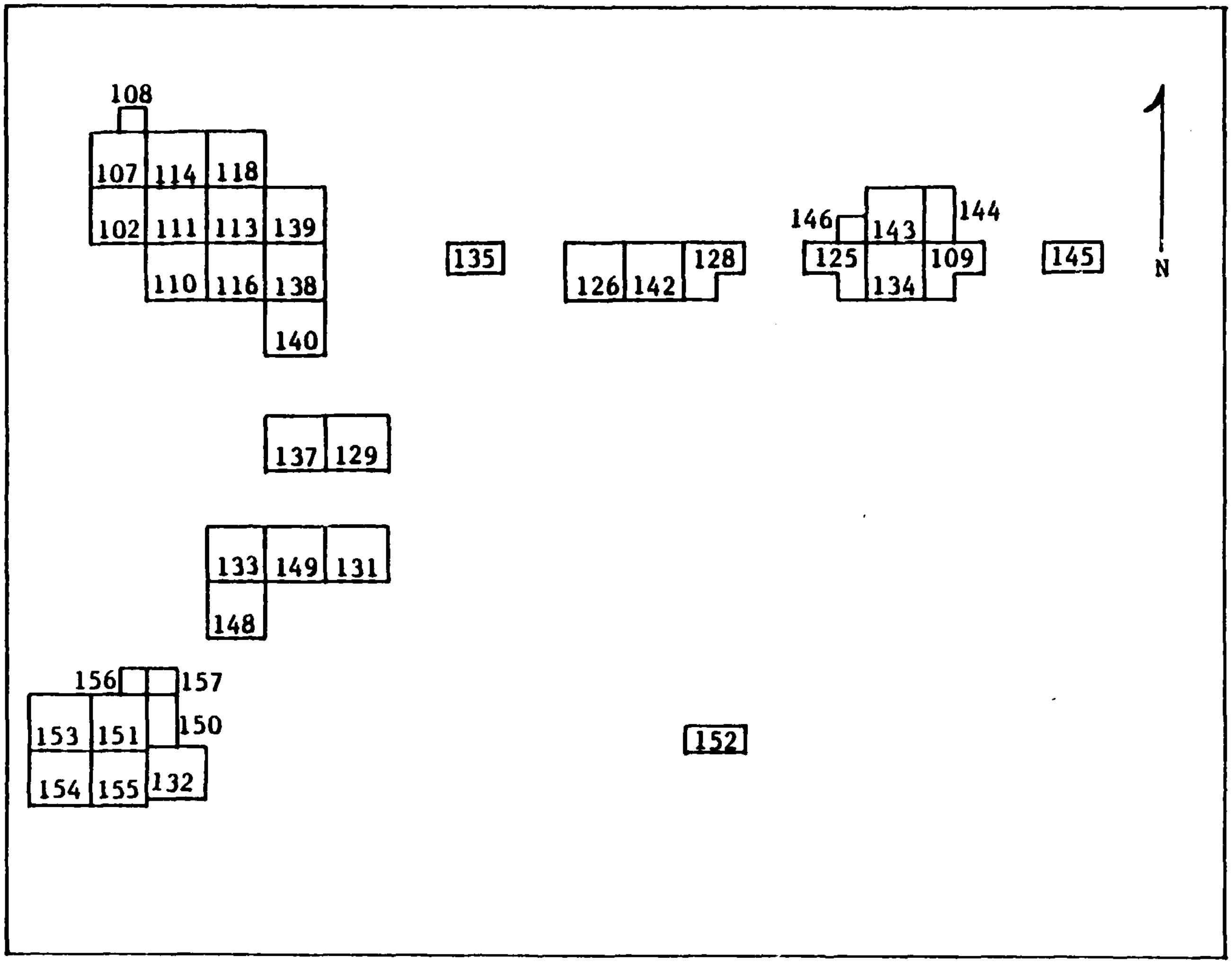


Figure VII-20. Distribution of flakes in Cultural Series 2B.



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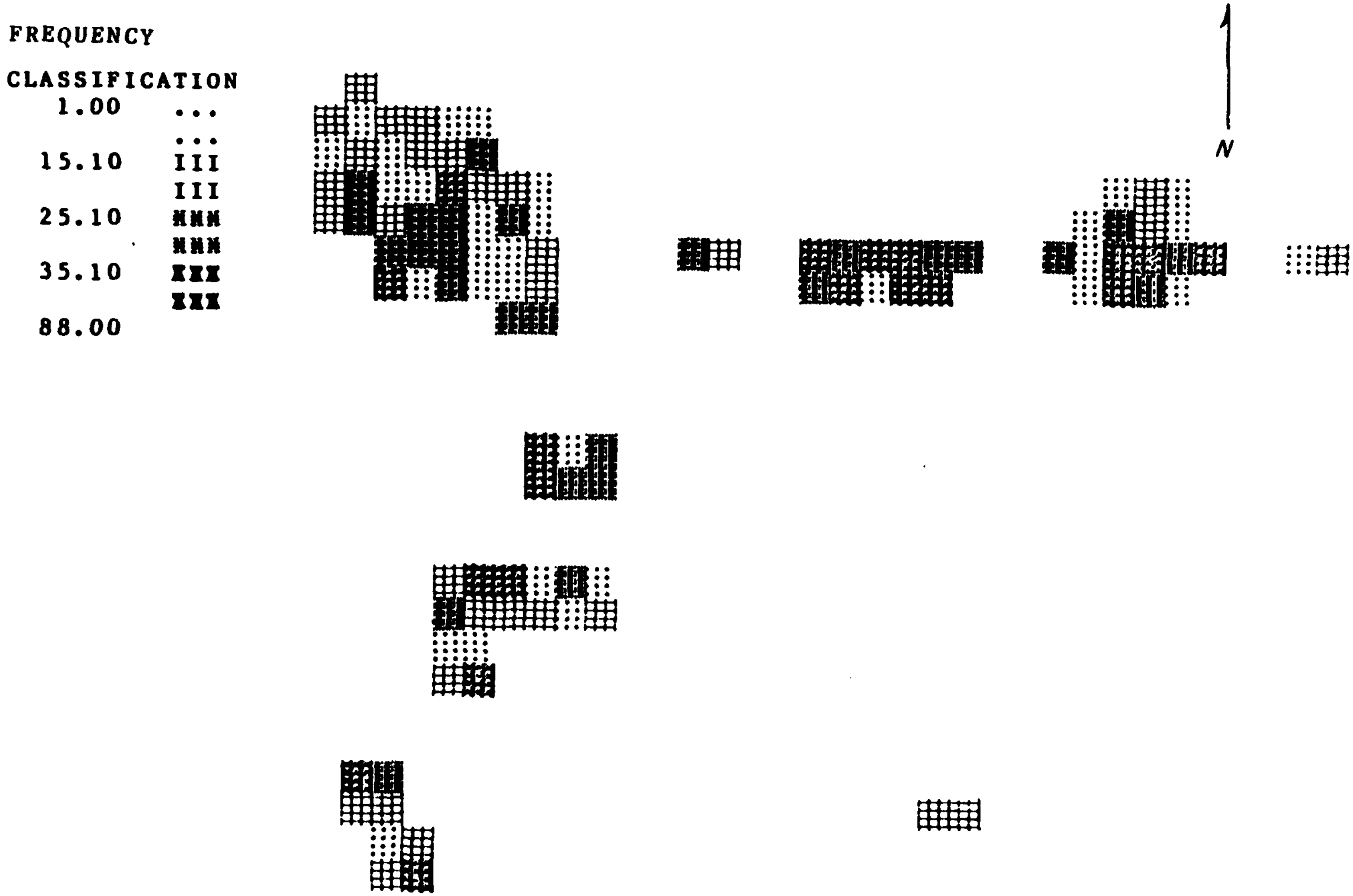


Figure VII-21. Distribution of chunks in Cultural Series 2B.

proportion (nearly 2:1) appears at first glance (Appendix F; Table F-3) to vary widely from flake: core ratios in other Cultural Series; however, when flake and core counts from the overlying plowzone are included (Cultural Series 2A), the proportions are more in line with those of other areas of the site. Probably, the flakes in Cultural Series 2B have been displaced by plowing whereas the cores have not to the same extent. The phenomenon is likely a function of size variations between flakes and cores.

Modified Flakes and Unifaces

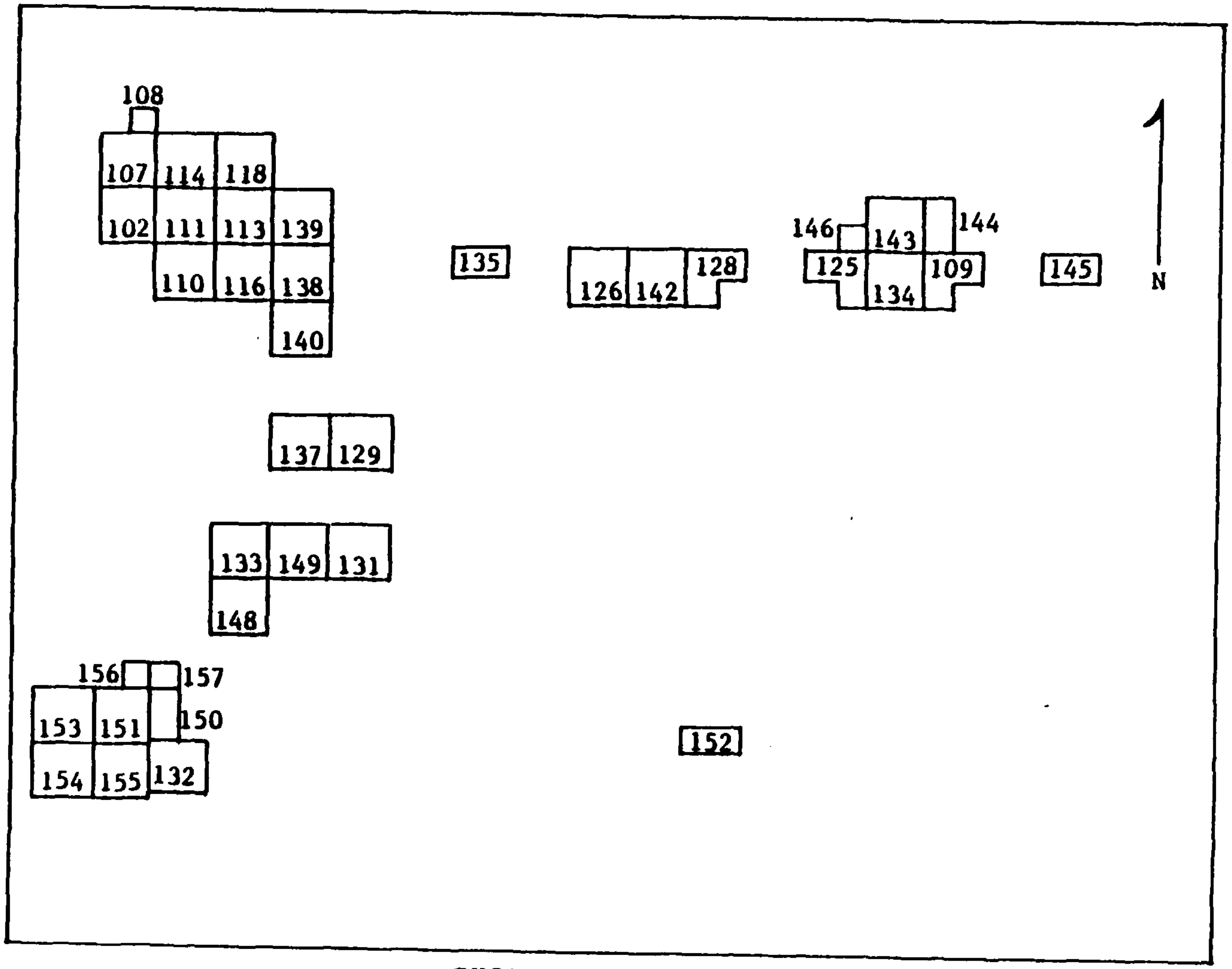
Relatively few modified flakes (n=35) are associated with Cultural Series 2B and their distribution appears to be more or less random (Figure VII-22). Rarely are modified flakes recovered from features. The only features to yield such specimens are the black stains. The rest are found in midden context. A few were located inside the structure but their frequency was not high enough to denote any specialized activity. No patterns are discernible for any of the subtypes of modified flakes.

Only eight unifaces, which are usually interpreted funtionally as scraping tools, were identified in Culture Series 2B. Given this low frequency, any interpretation of the significance of their distribution is highly conjectural. All but two are in the area immediately east of the structure between N520-N530 and E468-E476. In light of the very low frequency, no distribution map is illustrated.

Bifaces

The spatial distribution of bifaces in Cultural Series 2B indicates a preponderance of specimens around Structure 1, and in Units 126, 128, 134, 142, and 143 (Figure VII-23). To the south, the incidence of bifaces declines considerably. The vast majority of these specimens were aborted during manufacture (n=16) or broken (n=54). Only three specimens are intact and appear to be suitable for further modification or use. Two of these specimens are ovate with round and straight bases respectively, and the other is a lanceolate form that probably served as a tool. The fragments or aborted specimens are predominately straight based in examples where basal morphology can be determined. The remainder are mostly indeterminate as to shape or basal morphology. Therefore, it may be assumed that the bifaces generally represent discards, probably during the manufacturing process. These specimens also appear to have been discarded at a more advanced stage of reduction as secondary reduction bifaces occur in higher proportions in the Woodland assemblage than in the Archaic.

FIGURE VII-22



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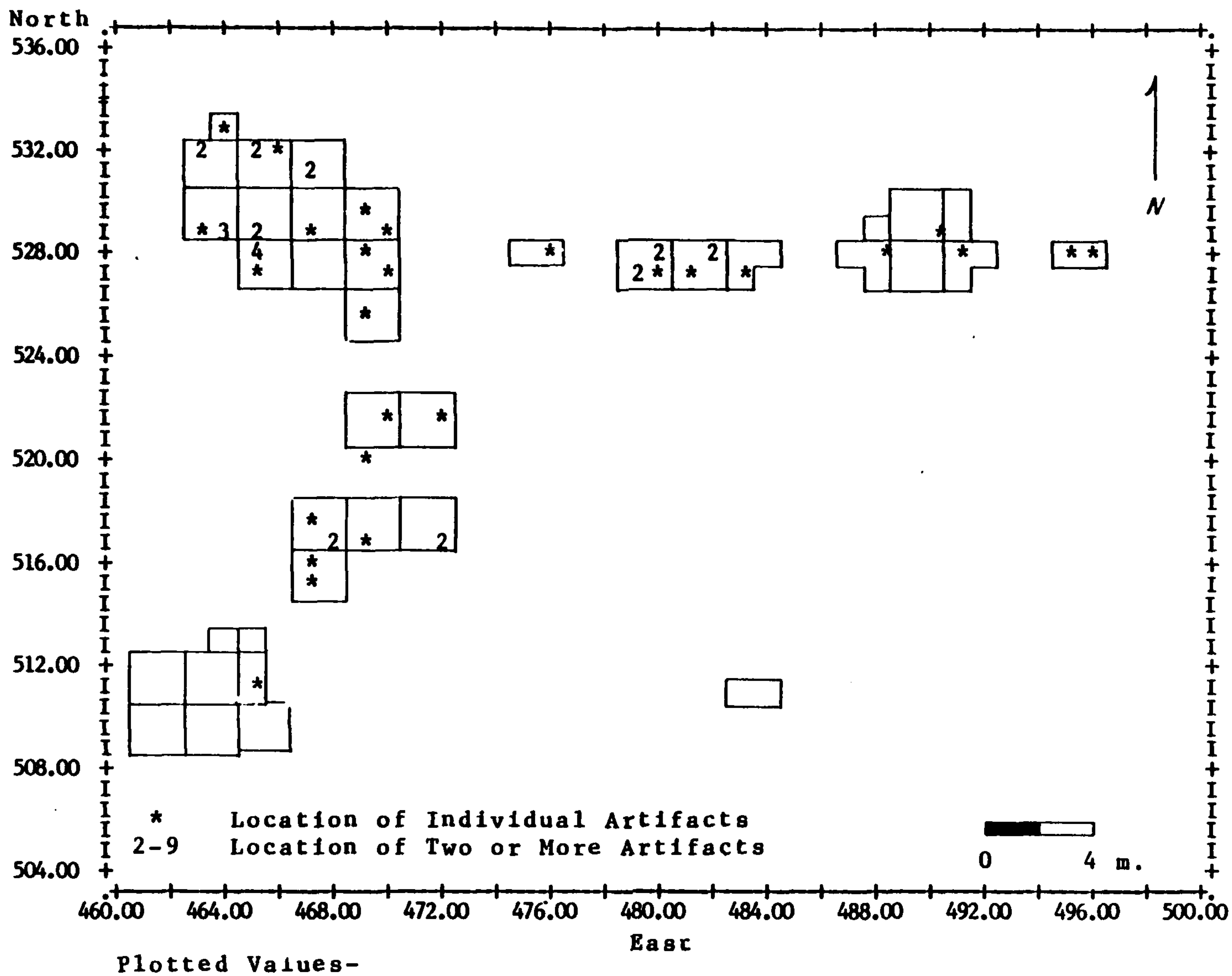
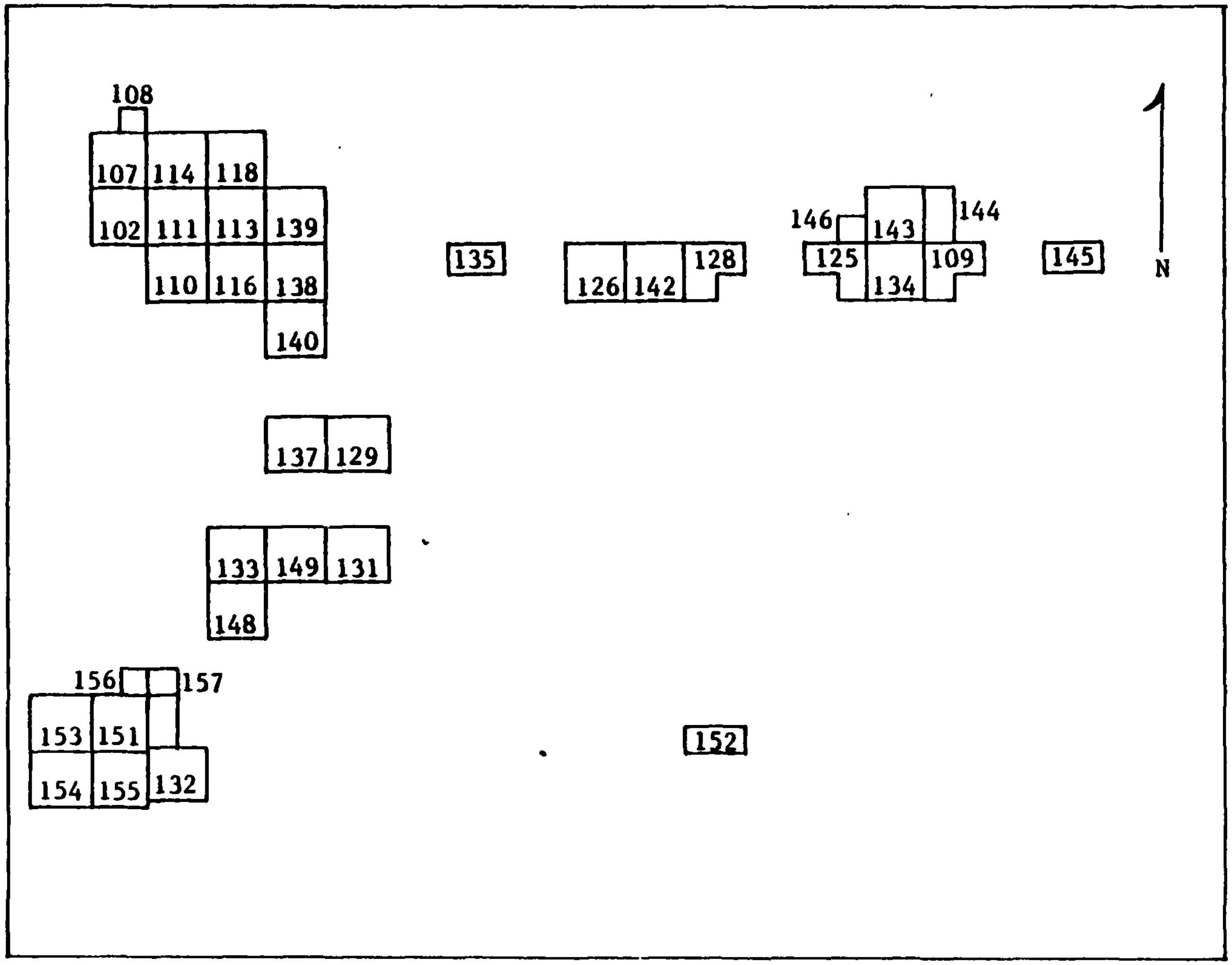


Figure VII-22. Distribution of modified flakes in Cultural Series 2B.



Excavation Units

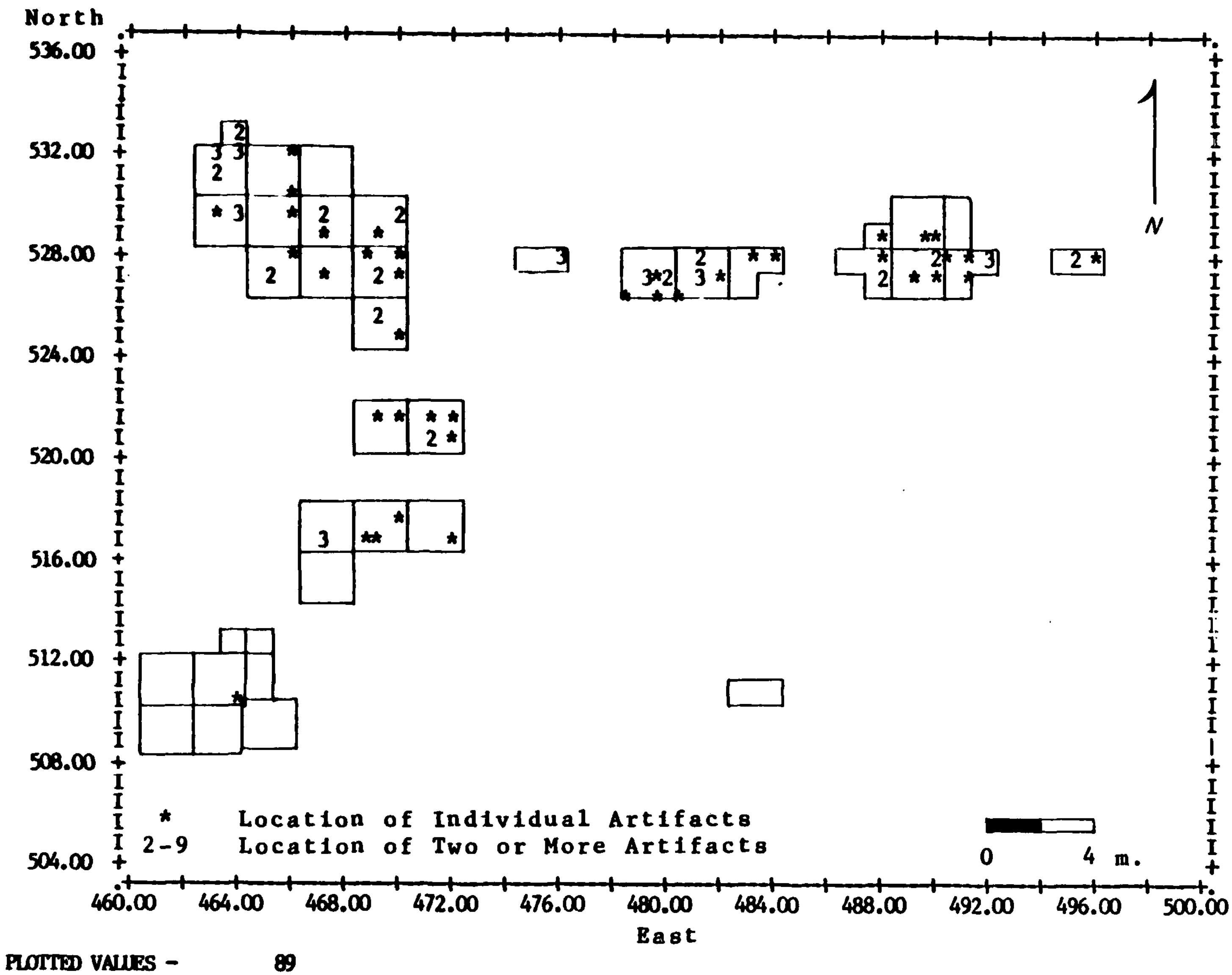


Figure VII-23. Distribution of bifaces in Cultural Series 2B.

As with many of the lithic artifact categories, bifaces are distributed primarily in the general midden rather than in features. An exception is the "black stain" feature type. All four examples of this feature type yielded one to four bifacial specimens. Three other features (36,42 and 46) yielded single examples. The remainder occur in the general midden. No particular spatial patterning by reductive stage is notable.

Projectile Points

The distribution of projectile points (Figure VII-24) shows a cluster in Units 111 and 113, principally, with scattered occurrences continuing to the east but very few to the south. For instance the unit block between N508-512 yielded no projectile points at all. The points date to several time periods but most fall within the Middle Woodland side notched (n=14), triangular (n=1) and lanceolate (n=1) forms typical of the McFarland/Owl Hollow complex. Most of these point styles are referable to Side-Notched 28-30 and 32 which are considered Owl Hollow in affiliation.

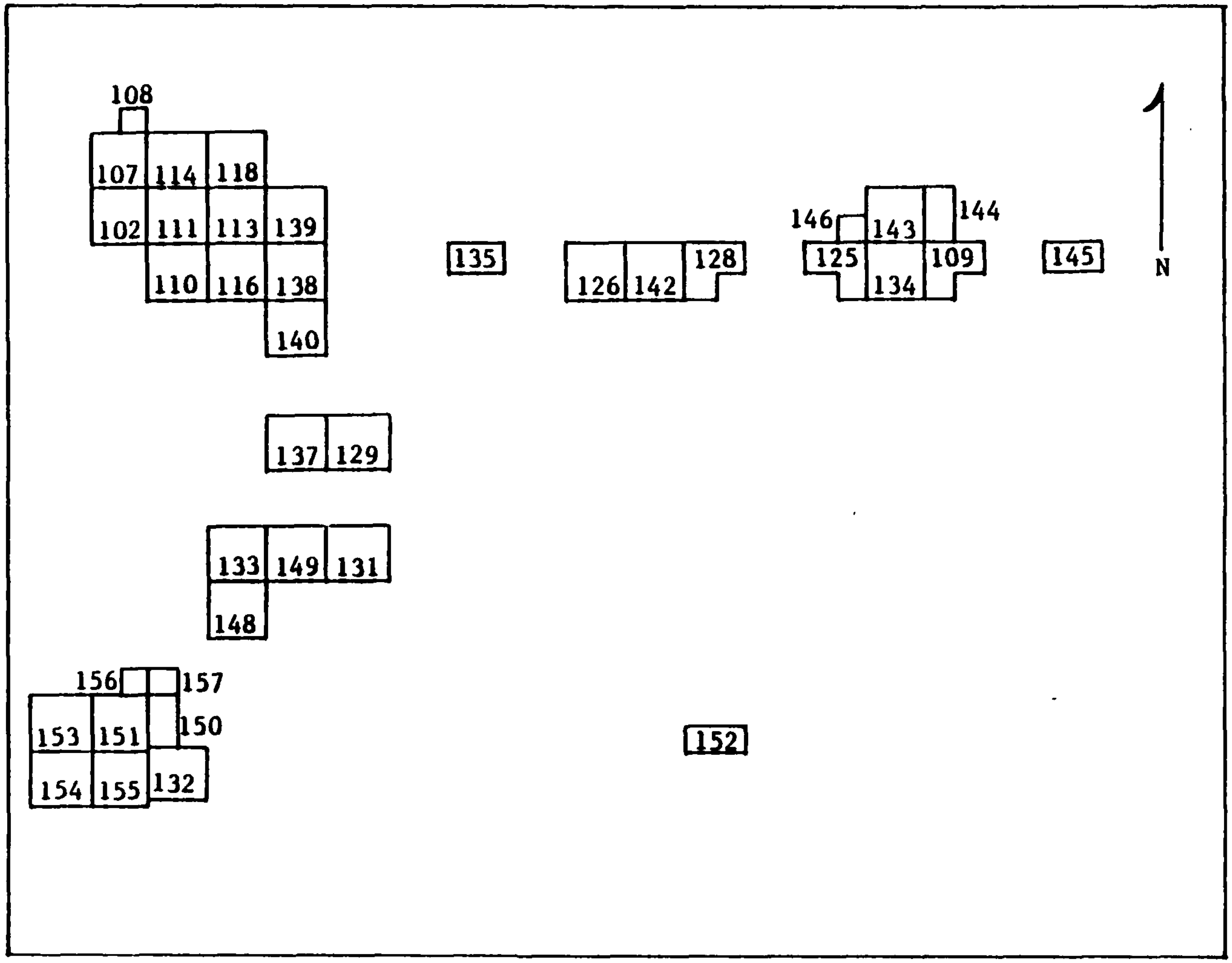
Patterns of Fire-Cracked/Other Rock and Ground Stone Distribution

A CMAP (Figure VII-25) of fire-cracked and other rock is presented below. Generally, this type of material does not appear to be consistent with any of the other artifactual patterns discussed above. Some concentrations of fire-cracked rock were noted in Features 7 and 30, from among the black stains, in the midden east of Structure 1 and to some extent in Units 126 and 142 but not as consistently as other artifact categories. Most of the denser fire-cracked rock accumulations are associated with rock-lined pits (Features 29 and 39), rock concentrations (Features 36, 40 and 51) and to some extent with black stains (Features 7, 8 and 30). The heating or cooking of materials (presumably vegetal items) adjacent to the black stain features seems to be one of the major functions associated with the distribution of rock.

Two scattergrams were run for ground stone artifacts, along with one for battered stone and one for pitted stone. The battered stone was distributed only in the midden; none was found in any of the features. These artifacts occur in very low frequencies which hamper spatial interpretation.

The ground stone artifacts could have been employed in some form of plant processing. If vegetal food processing and consumption were taking place on a large scale, then greater quantities of grinding and ground stone implements would be expected. However, as mentioned before, only a few ground stone artifacts were recovered from the surface

FIGURE VII-24



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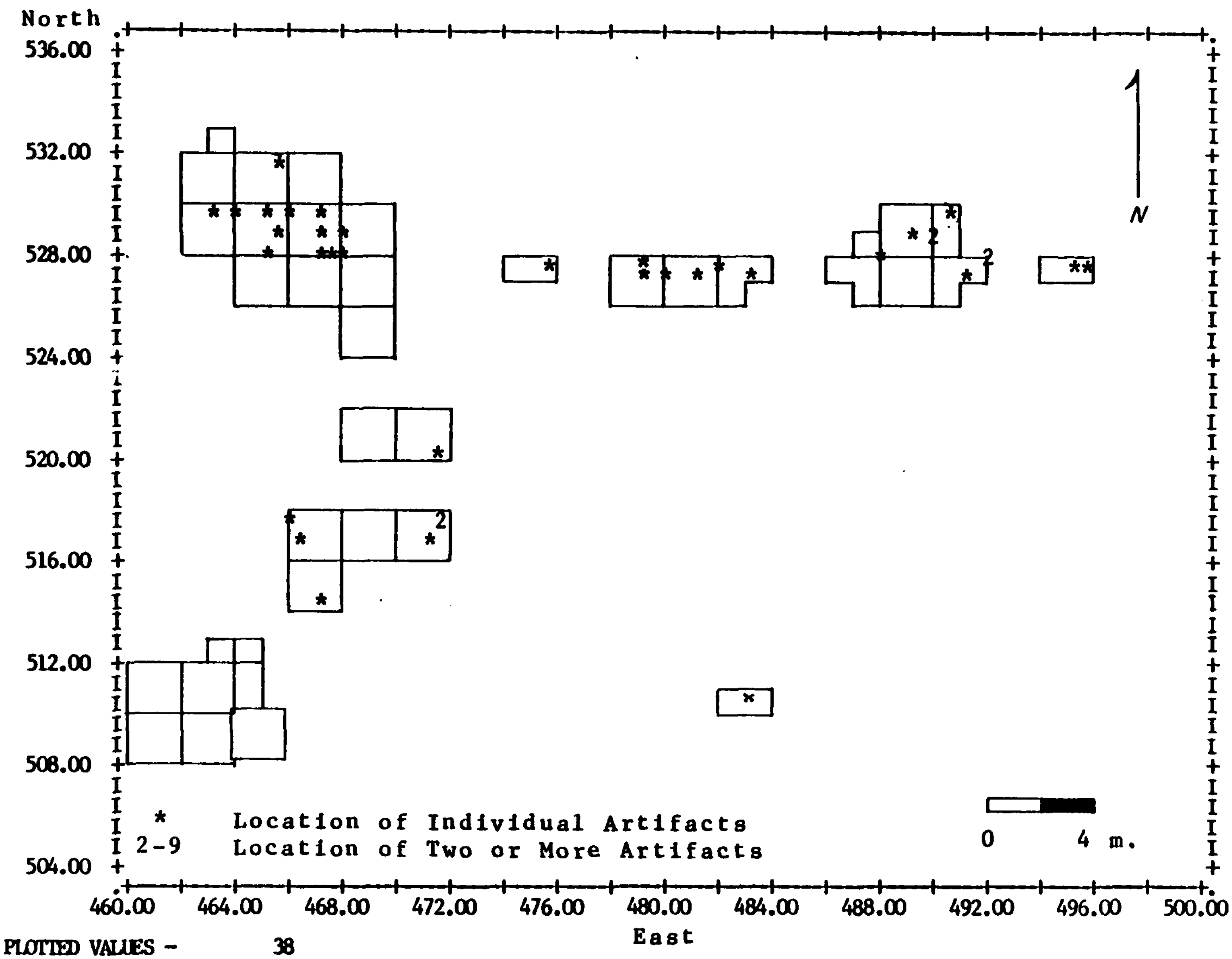
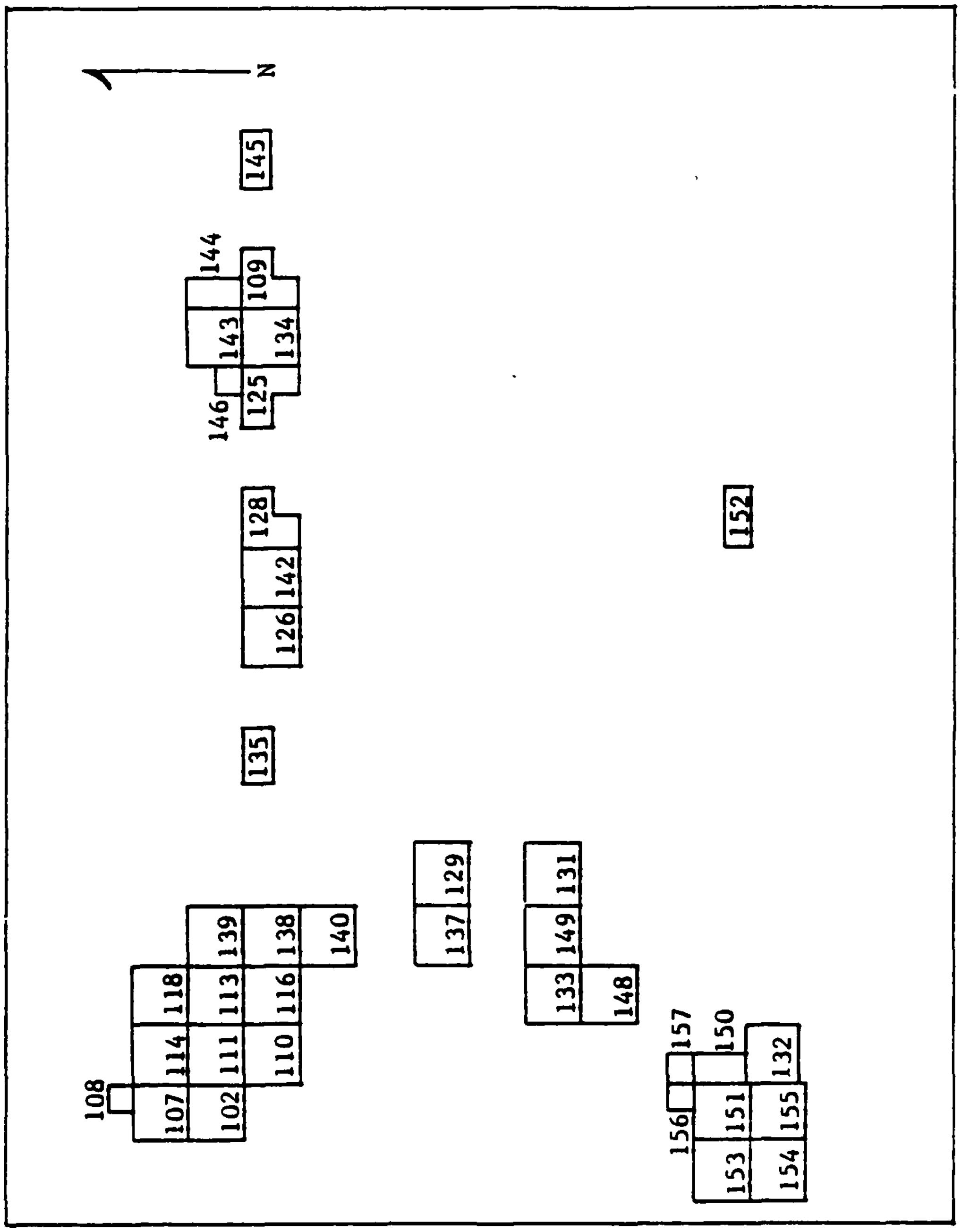


Figure VII-24. Distribution of projectile points in Cultural Series 2B.



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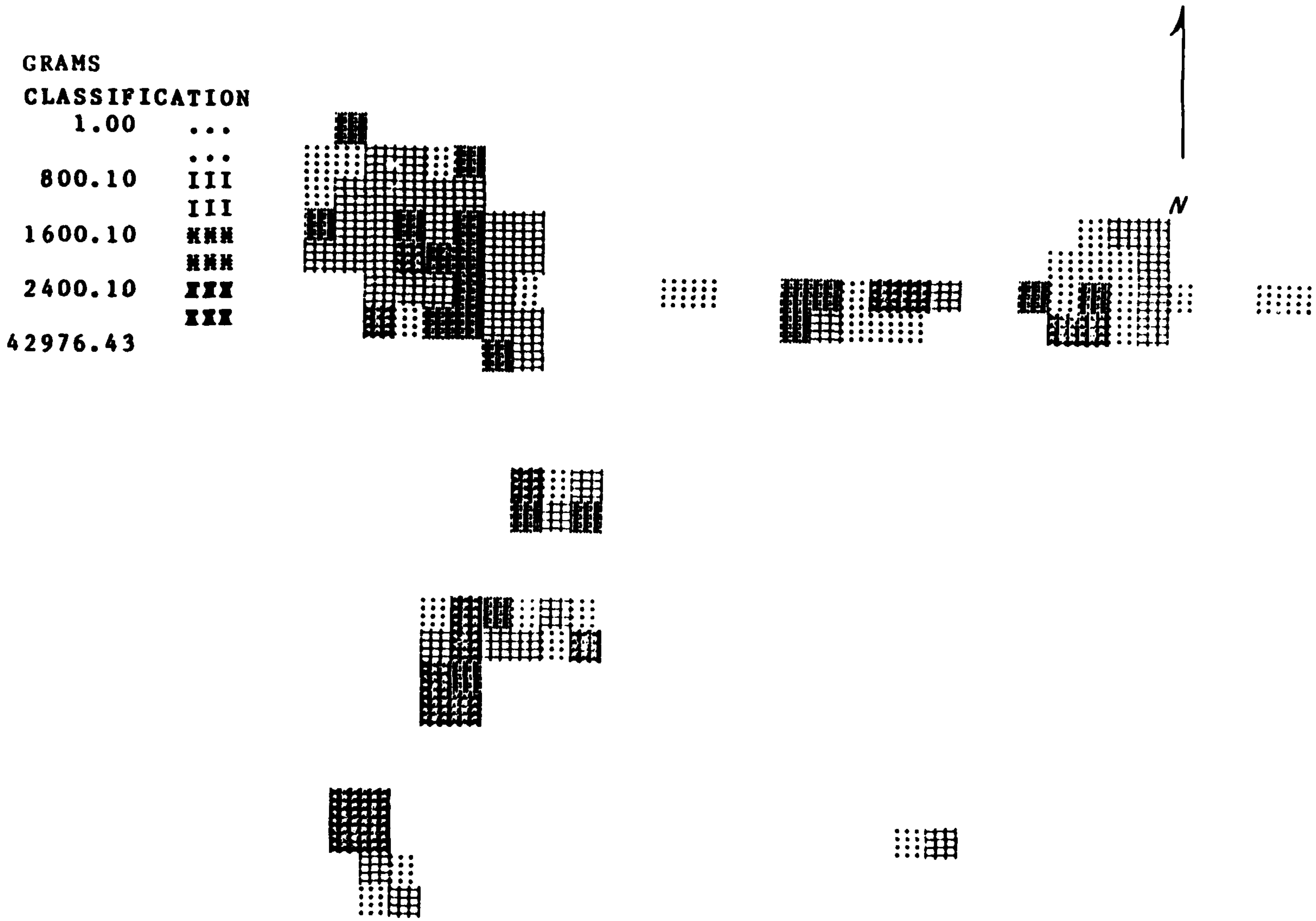


Figure VII-25. Distribution of fire-cracked and other rock in Cultural Series 2B.

collection, suggesting that food processing activities related to ground stone tools were not being heavily performed at the site.

As for the battered stones, they could have been used either for food processing or for tool maintenance. Again, the small sample and lack of clear association with other artifactual types does not present a resolution to the problem.

Only two pitted stones were recovered from excavations in the South Block; one from Unit 131 and another from Unit 148. Both were associated with midden and were found within 6 m of one another.

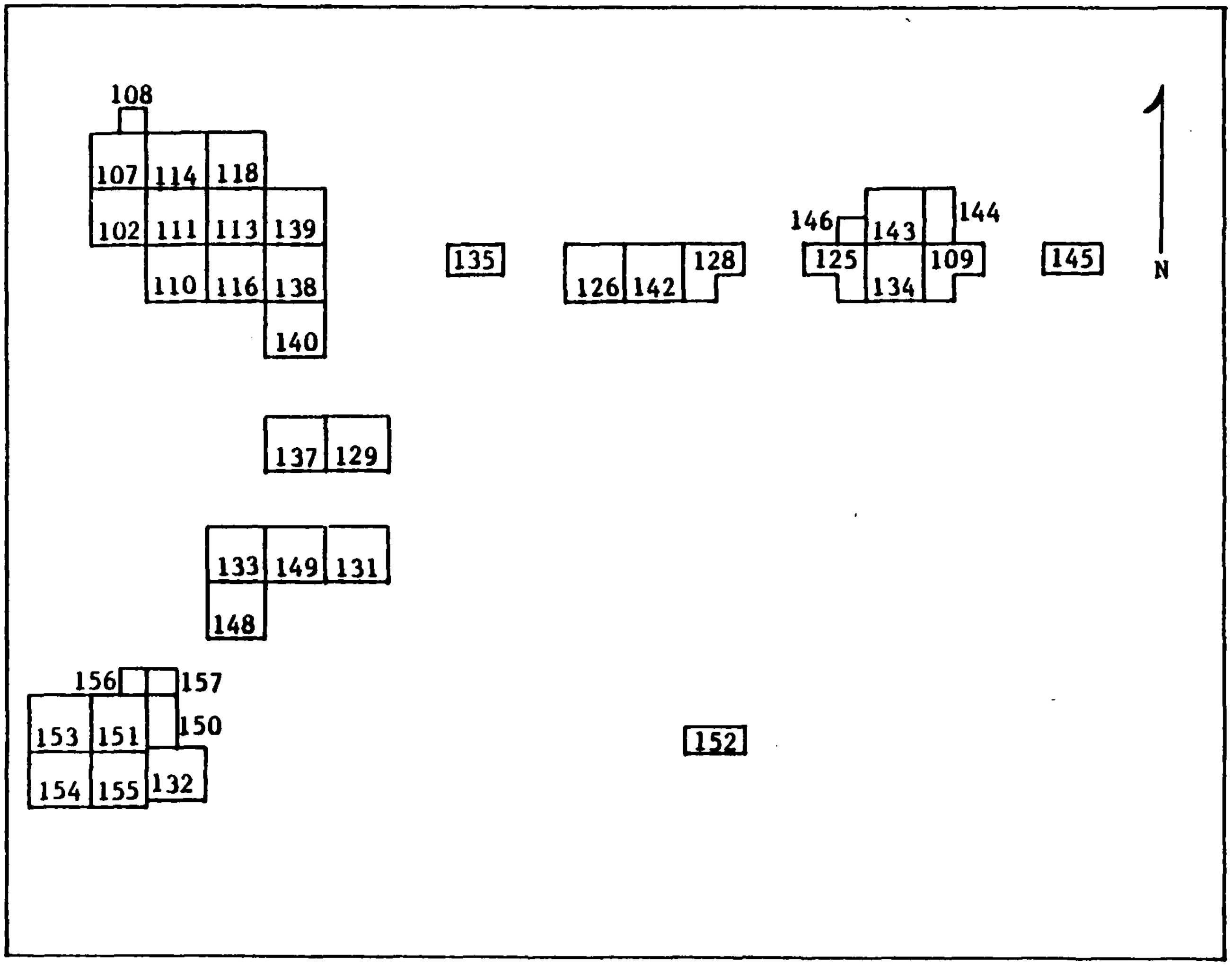
Patterns of Ceramic Distribution

Five ware groups comprising 12 ceramic types were recognized in the Hurricane Branch artifact assemblage. Most of the sherds were recovered from Cultural Series 2B. Densest accumulations for ceramics as a whole occur: 1) in a small area of Unit 143 in and around the northwest portion of Feature 31; 2) in Units 126 and 142 and the south quadrant of Unit 128; 3) the east half of Unit 135; 4) in Units 138-140; 5) around Feature 7; 6) in spot clusters within Structure 1; 7) around Feature 30; and 8) in a spotty pattern in Units 131, 133, 148 and 149 (Figure VII-26). This distribution suggests that much of the activity involving ceramic use is taking place in and around the black stains and in the vicinity of the structure. Many of these clusters probably represent individual episodes of pot breakage. At least four such instances of pottery concentrations were noted in the field. These occurred in Units 116, 126, 131 and 140. Feature 16 also contained the remains of a pot.

When distributions of individual types or groups of types are examined, some variable patterning is discernible. Limestone tempered plain surfaced ceramics are distributed essentially identically to the ceramics as a whole. This is due to the high frequency of this type.

Limestone tempered simple stamped pottery (Figure VII-27) is distributed fairly evenly over Cultural Series 2B with moderate concentrations in Units 126, 128 and 142, and in the vicinity of Features 8 and 30. Only minor amounts occur in Structure 1. The frequency of cordmarked and check stamped pottery is so low that interpretation of spatial patterning is not particularly relevant. Although specimens were not recovered from every unit, all of the excavation blocks yielded small frequencies of check-stamped and cordmarked sherds. No particular clustering was notable. The Keys Plain sherds are all concentrated in the area between N527 and N533 and E462 and E466, which is in the

FIGURE VII-26



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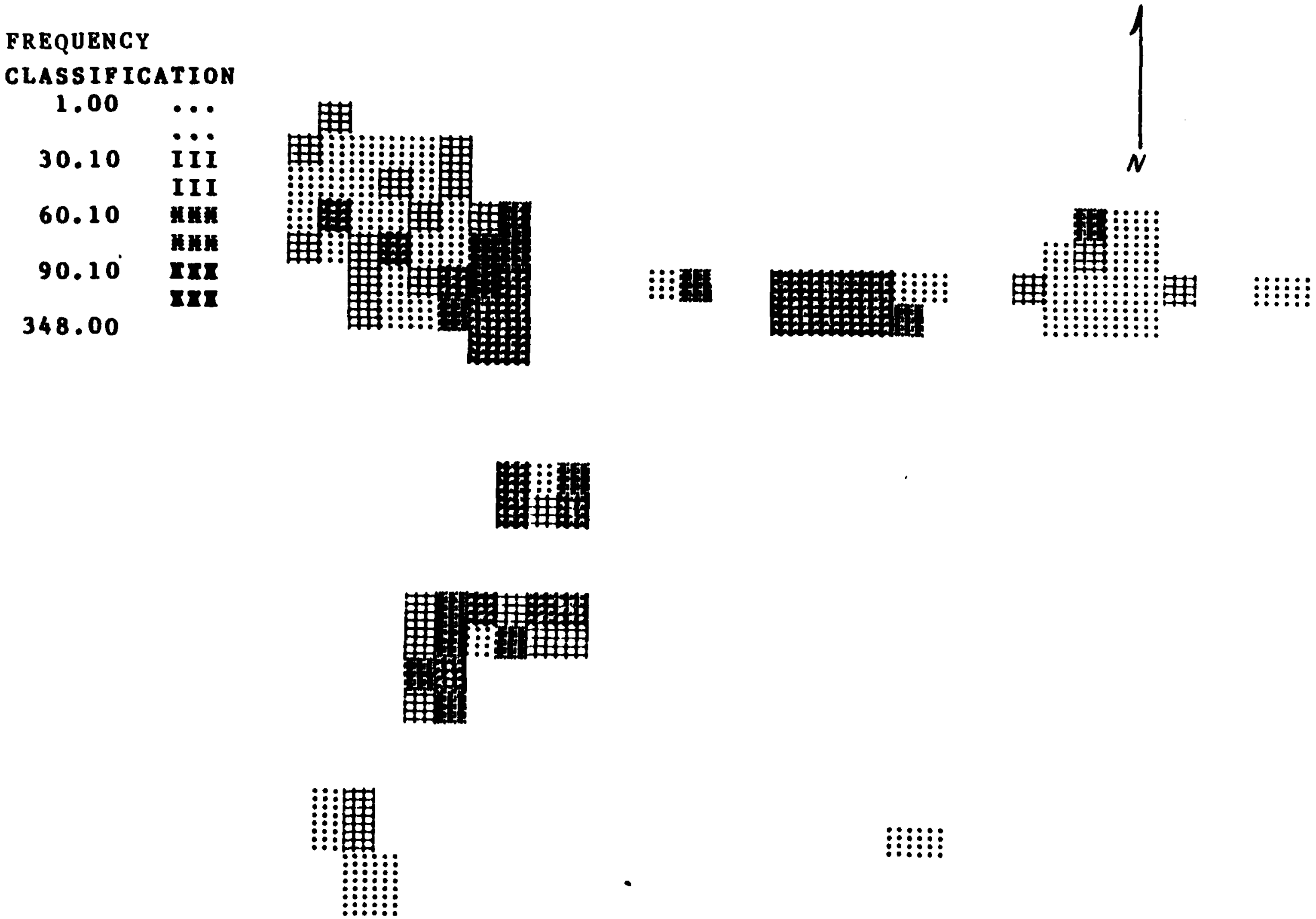
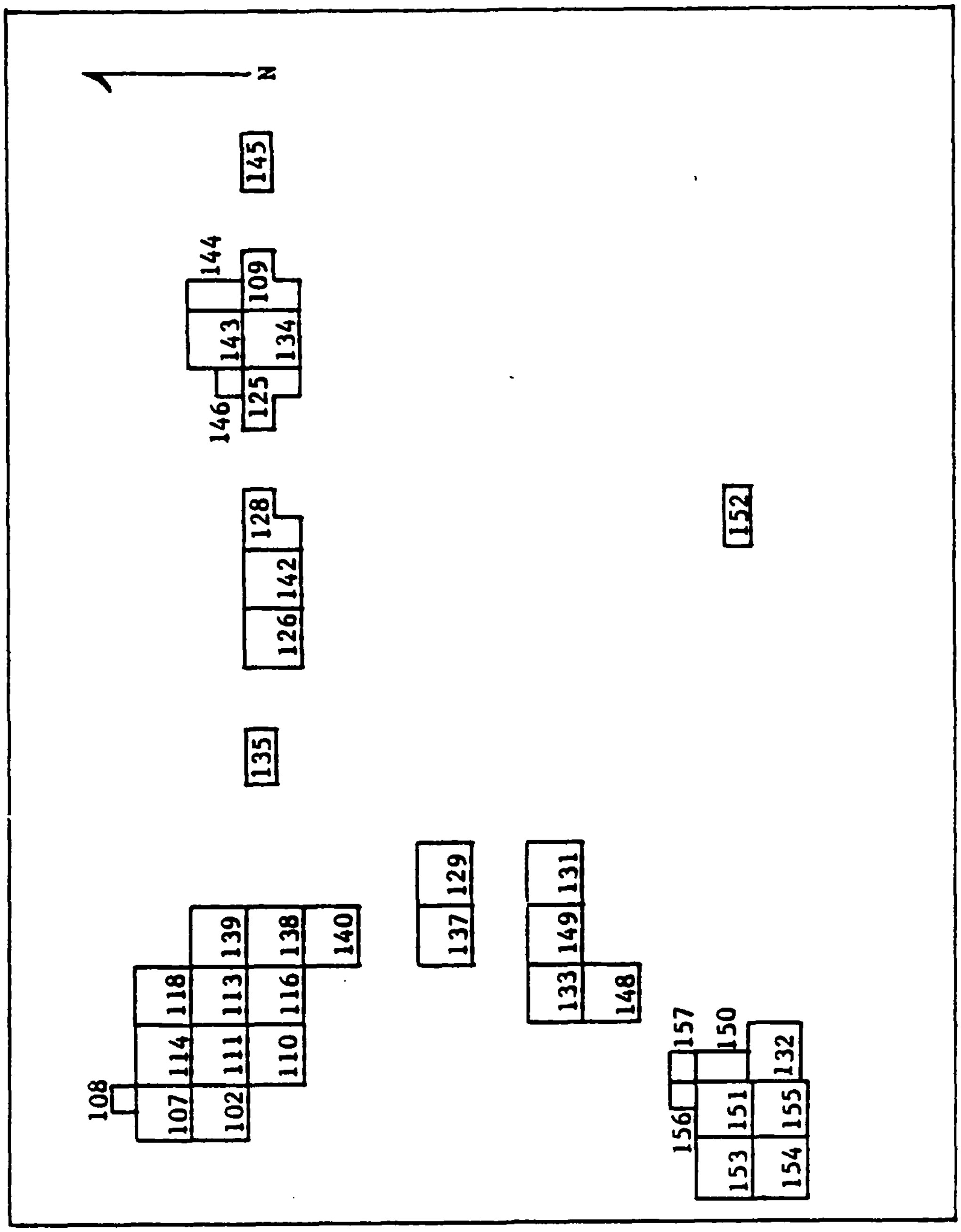


Figure VII-2G. Distribution of Ceramics in Cultural Series 2B.



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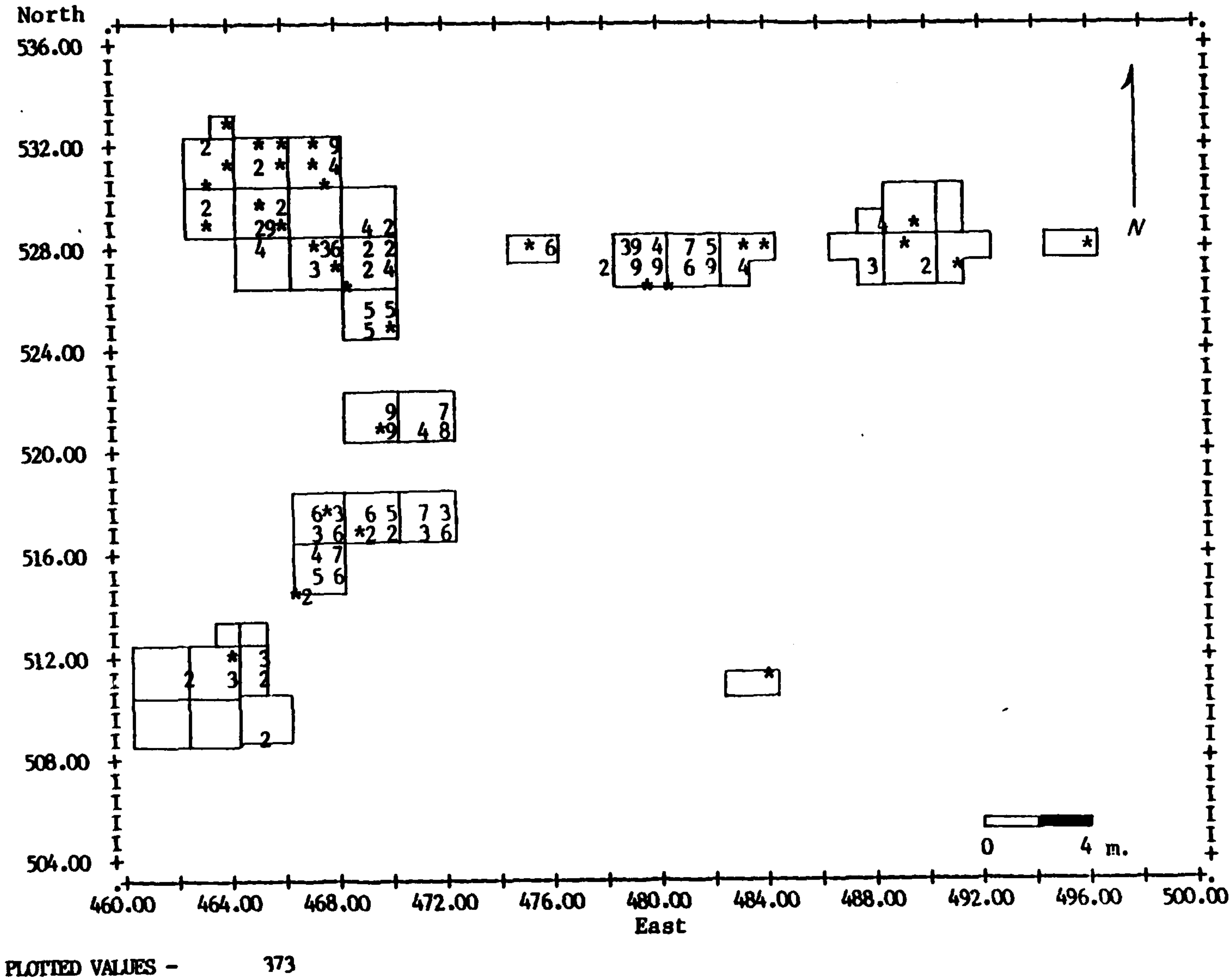


Figure VII-27. Distribution of simple stamped ceramics in Cultural Series 2B.

vicinity of Structure 1. Most of these sherds appear to have originated from one vessel. Shell tempered sherds predominate in the plowzone although a few were recovered from midden deposits. Those in the midden were found primarily in and around Units 110 (containing part of Feature 7), 126, 138 and 142. There is no observable association between shell tempered sherds and black stains or other features. A dense accumulation occurs in the plowzone statigraphically above Feature 31 which suggests that shell tempered sherds in the feature itself are intrusive. Other types are infrequent making any meaningful statements concerning spatial patterning impossible.

Patterns of Botanical and Faunal Distribution

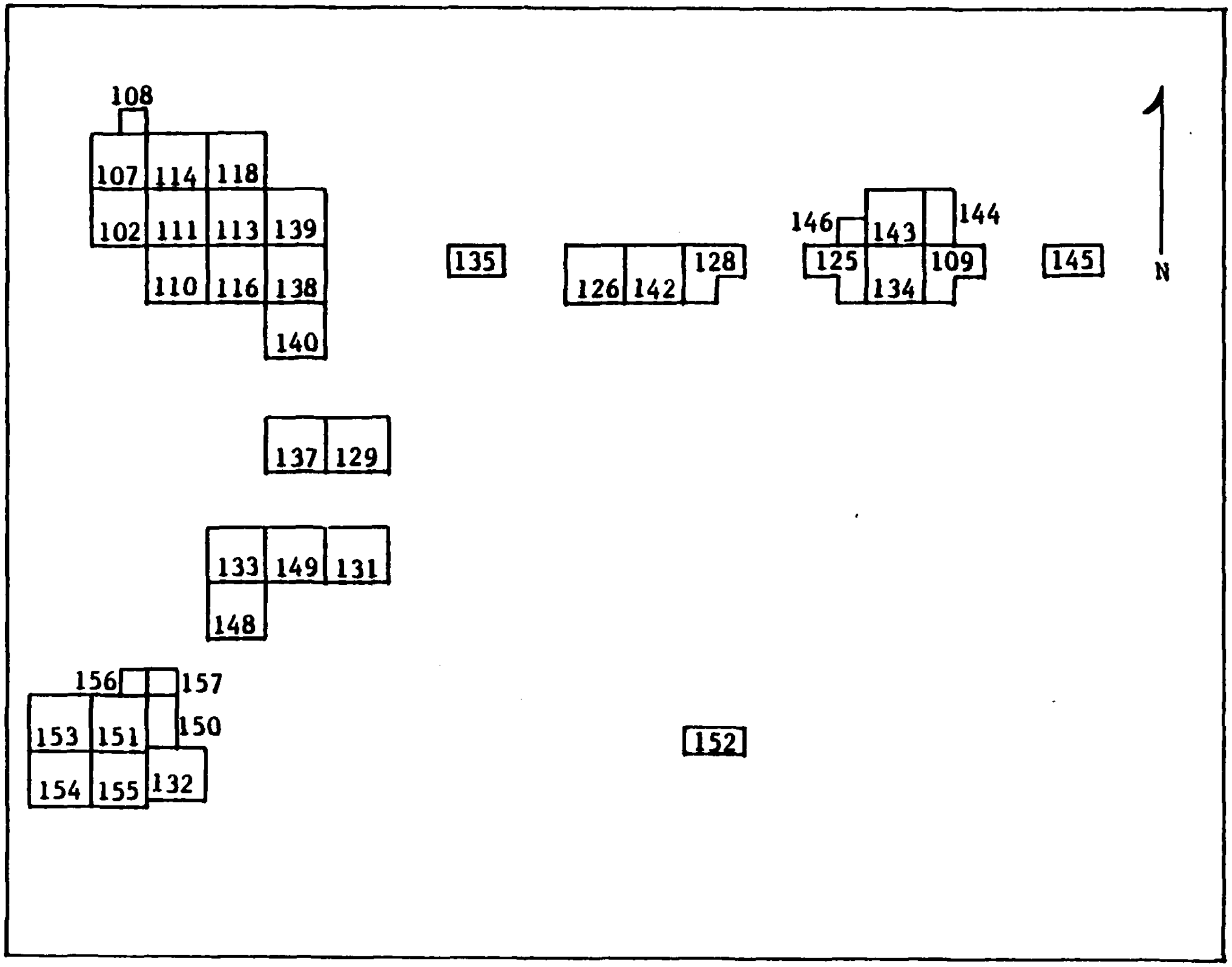
The distribution of faunal remains in Culture Series 2B exhibits two main areas of concentration -- Feature 40, 51 and 54 and their inclusive units; and units comprising Feature 31 and environs (Figure VII-28). The rest of the bone is scattered throughout both midden and feature contexts. The bone assemblage as a whole is about evenly divided between burned and unburned specimens. Most of the unburned bone is in feature contexts. About half of the burned bone occurs in features. The difference in proportions appears to be due to recovery techniques rather than cultural patterning. As with most of the other artifact categories, bone is of low density within the structure. The concentration in Feature 40 probably represents a combination of deposition of burned bone generated by cooking activities and subsequent cultural or natural inclusions of unburned bone. Feature 51 contained mostly unburned bone. As it appears to be a secondary deposit of burned rock, the bone association is probably fortuitous. Feature 54 was a pit containing burned bone. No in situ burning of the feature walls or floor was observed yet the bones were articulated.

The concentration around Feature 31 is comprised of numerous tiny pieces which in toto could fit comfortably in a teacup. Therefore, the significance of this pattern appears rather equivocal.

An anomalous concentration of deer long bones in Feature 20 represents an unexplained phenomenon that departs from the general faunal distribution.

Figure VII-29 reveals the distribution of hickory nuts in the South Block area. Feature 40 contained a substantial component of hickory nut which is consistent with the proposed cooking function assigned to the feature. Also, the relatively heavy concentrations of hickory nuts in Units 126 and 142 (within Features 29 and 34, respectively). are consistent with the overall dense debris pattern observed there.

FIGURE VII-28



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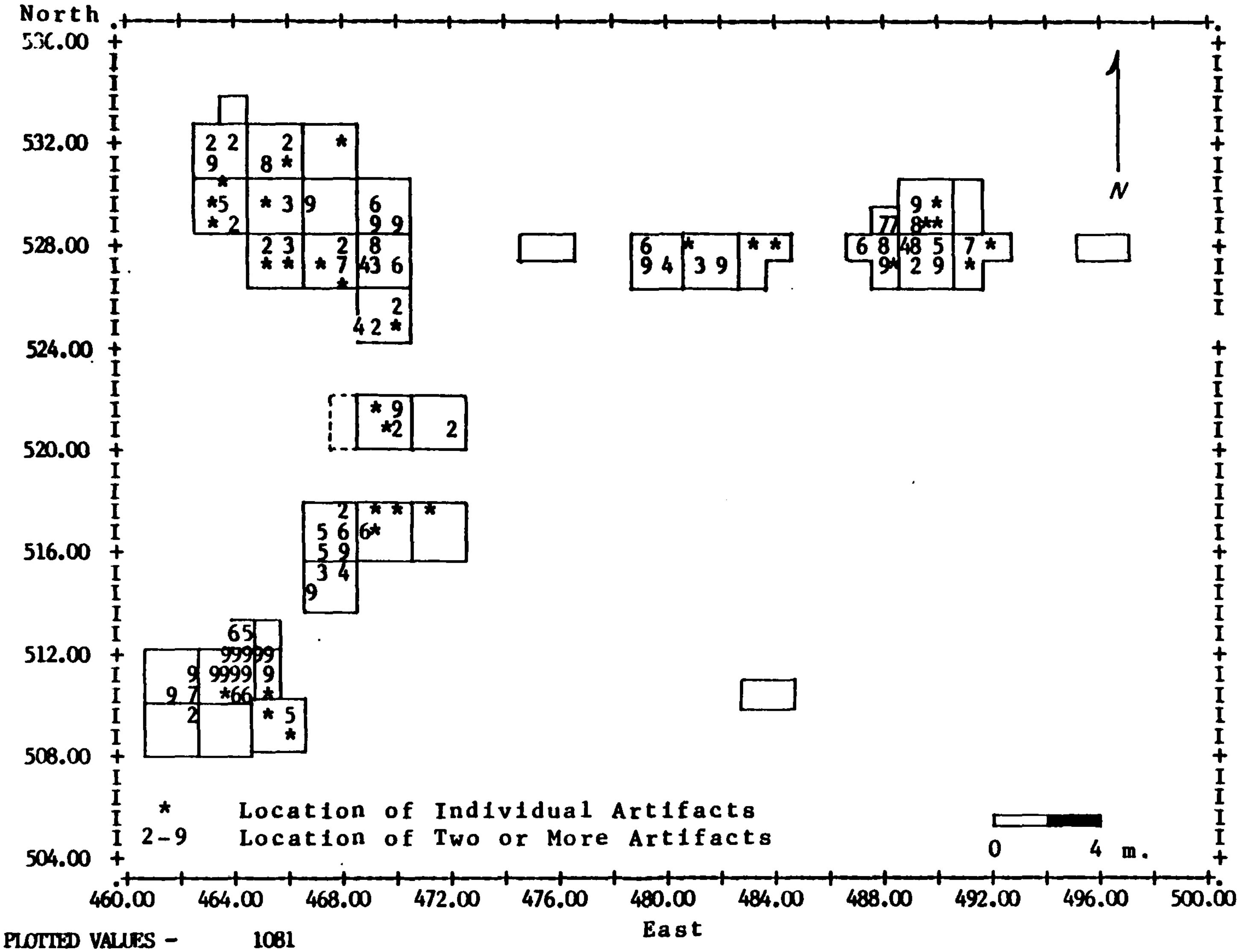
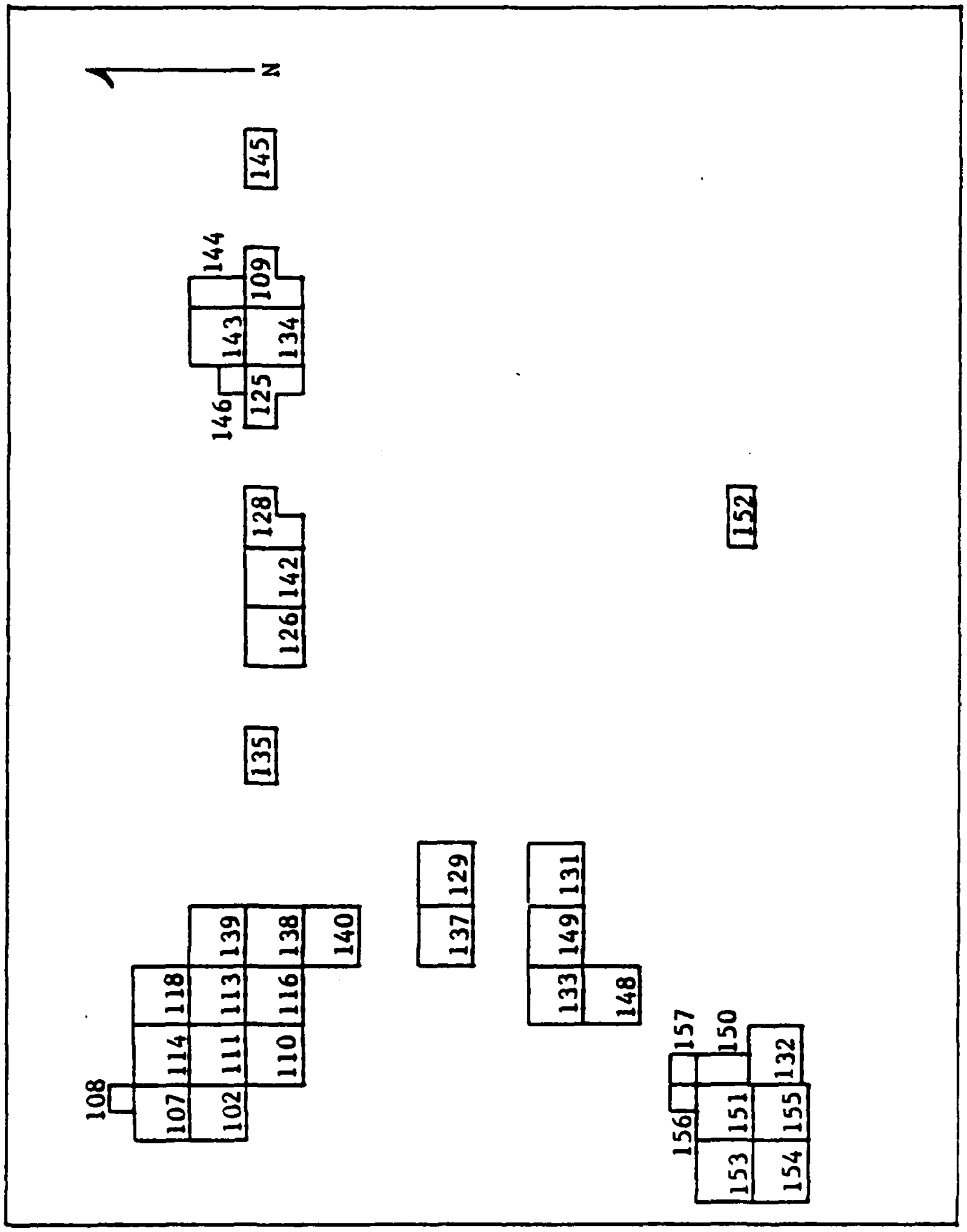


Figure VII-28. Distribution of bone in Cultural Series 2B.



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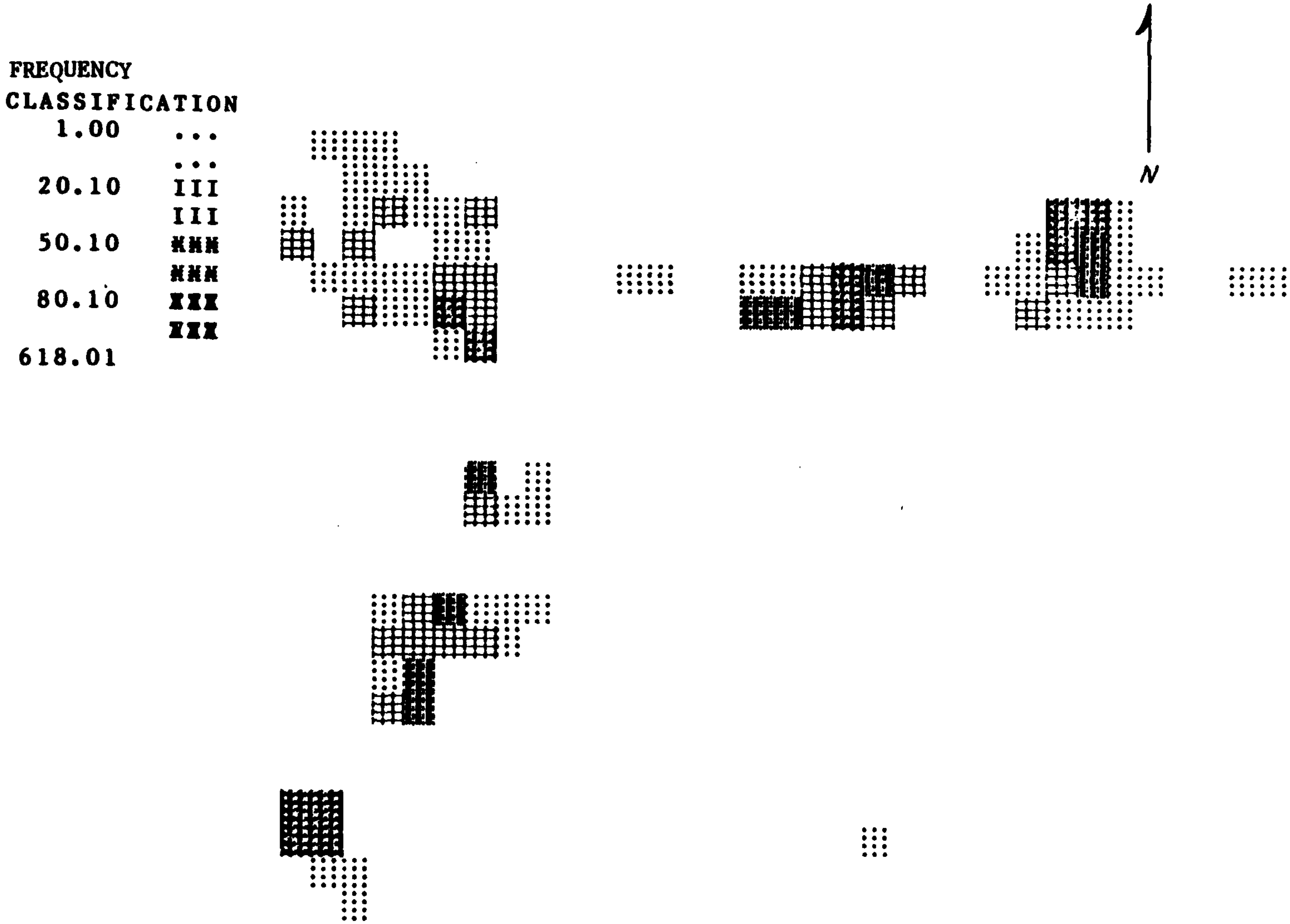


Figure VII-29. Distribution of hickory nut in Cultural Series 2B.

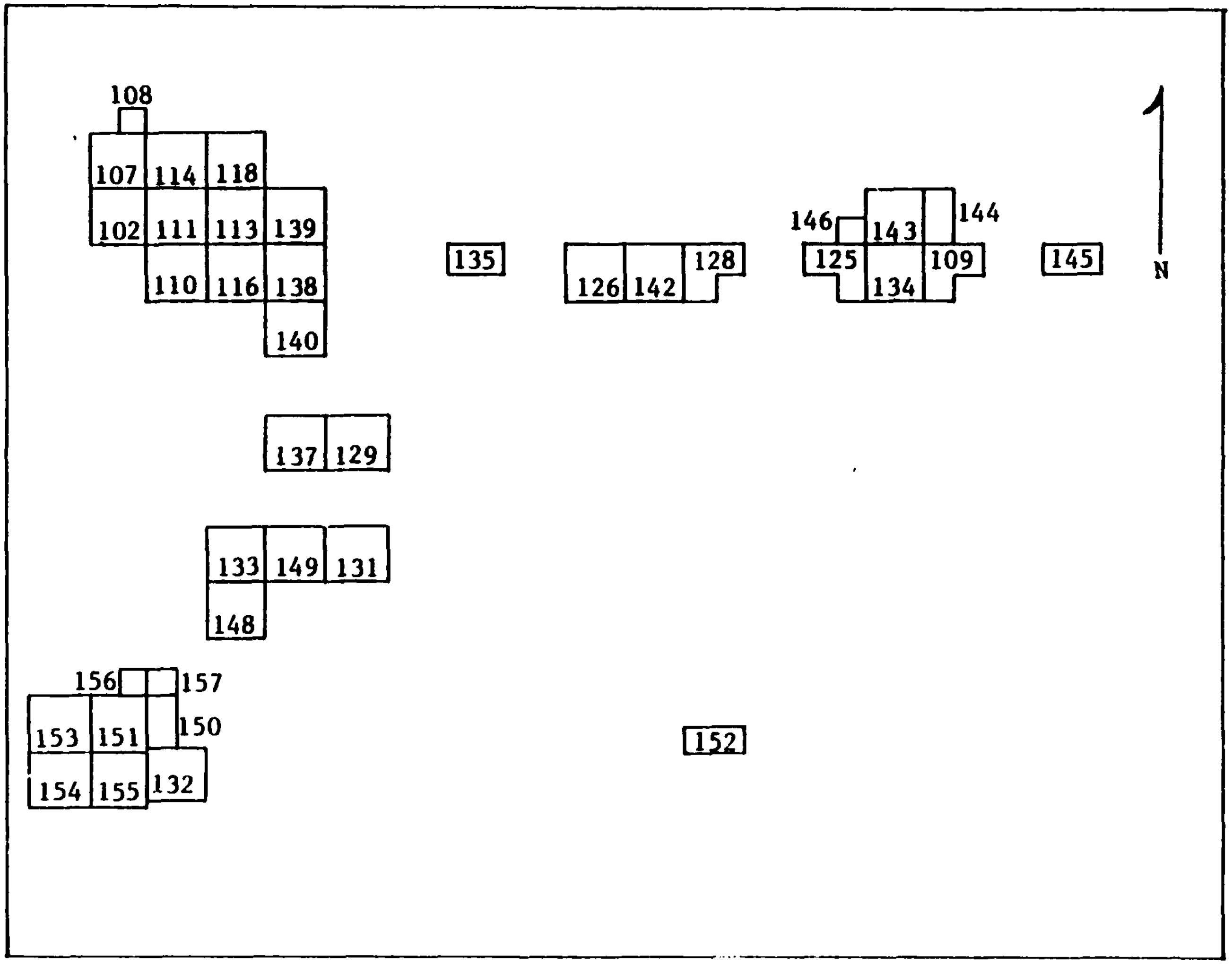
The other major nut species identified at Hurricane Branch are butternut and walnut. In general, butternut has a lower frequency but is scattered over the excavated portion of the South Block in a manner very similar to both hickory and walnut except that it is densest in and around Feature 31. Walnut appears densest around and in Feature 40 and Feature 31 (Figure VII-30). The remainder are scattered throughout the general midden and in some of the features, more or less paralleling the hickory distribution. Few specimens were identified within Structure 1, however, which again conforms to a distributional pattern already established for other artifact categories.

Wild seeds and cultigens exhibit decidedly different patterns than the various nuts (Figure VII-31). Other than a single specimen of Chenopodium in Feature 35, the remainder was recovered in the extreme south excavation unit in Feature 40. The Chenopodium was associated with two rock concentrations and one fired area. Half of the wild grape (Vitis sp.) was recovered from Features 31 (a black stain) and 37 (a charcoal concentration). As Feature 37 was enclosed by Feature 31, this frequency suggests a greater concentration in this area since the remaining specimens occur as single examples in Features 24, 29 and 49, 2 specimens from Feature 40 and 4 specimens scattered within the general midden.

Other patterns which suggest that the Hurricane Branch Site is botanically structured horizontally is the distribution of sumac (Rhus sp.) and corn (Zea mays) (Figure VII-31). Sumac was found predominately in Feature 35, a fired area, which also contained Chenopodium and unidentified wild seeds. It is interesting to note that Chenopodium on the high floodplain of the Hurricane Branch Site is available for collection during the late spring/early summer season while sumac appears in the fall (see Chapter VI, botanical section). The fact that they occur together may only be fortuitous; however, it is more likely that they were processed in Feature 35 at different times of the year, suggesting either continuous occupation of the site during sequential seasons or intermittent re-use of the area from season to season. As interpreted in Chapter VI, Feature 35 appears to have been cleaned out, suggesting its re-use as a fired area.

Corn (Zea mays) was predominantly associated with Feature 31 (black stain) but was also recovered from Feature 30 (black stain), Feature 34 (charcoal concentration of unknown function) Feature 40 (rock concentration) and Feature 54 (a pit of unknown function). Feature 30 produced one squash rind fragment (Cucurbita sp.) as did Feature 40. In addition to corn, Feature 34 also contained a large amount (n=77) of unidentified botanical remains, possibly fungus.

FIGURE VII-30



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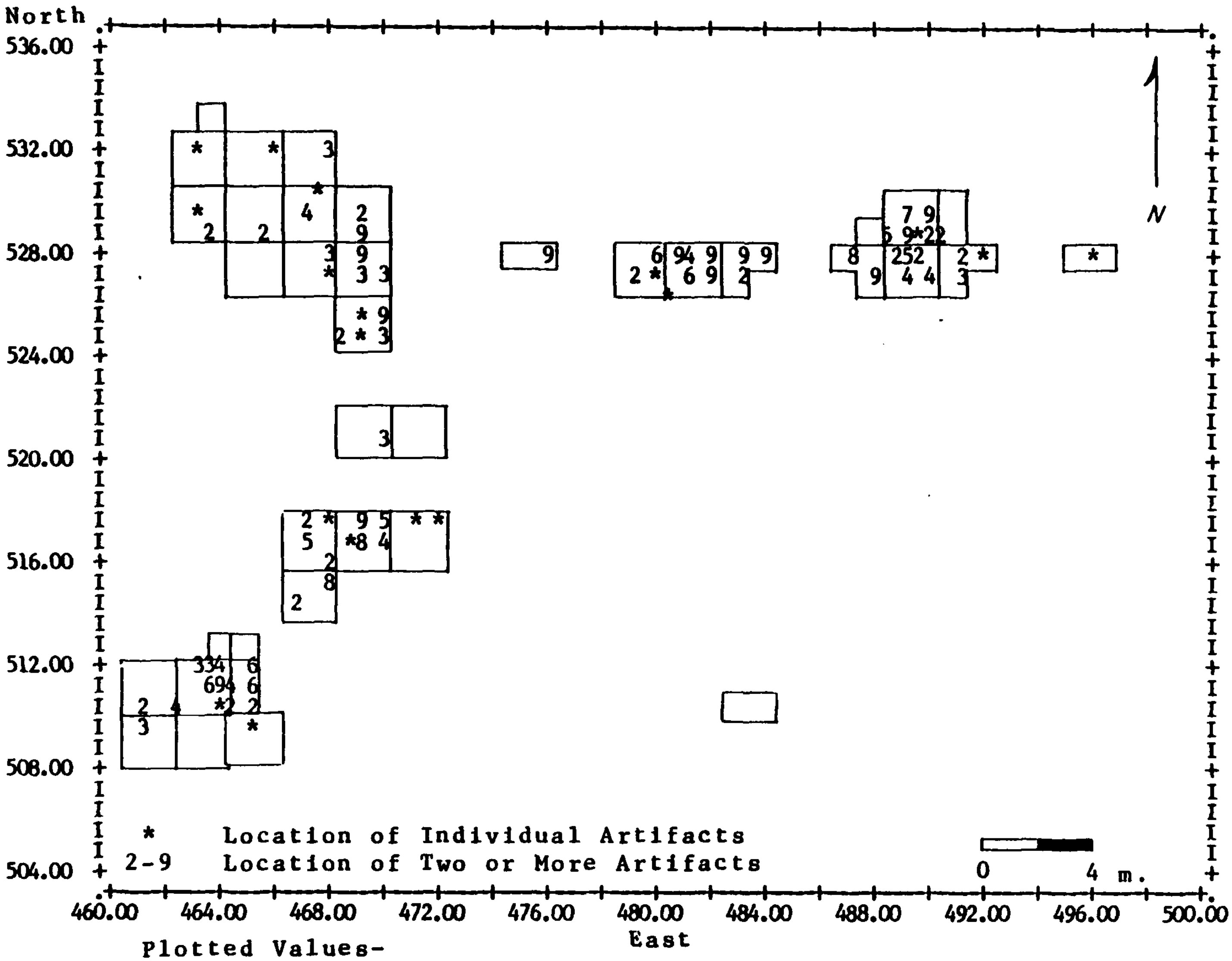
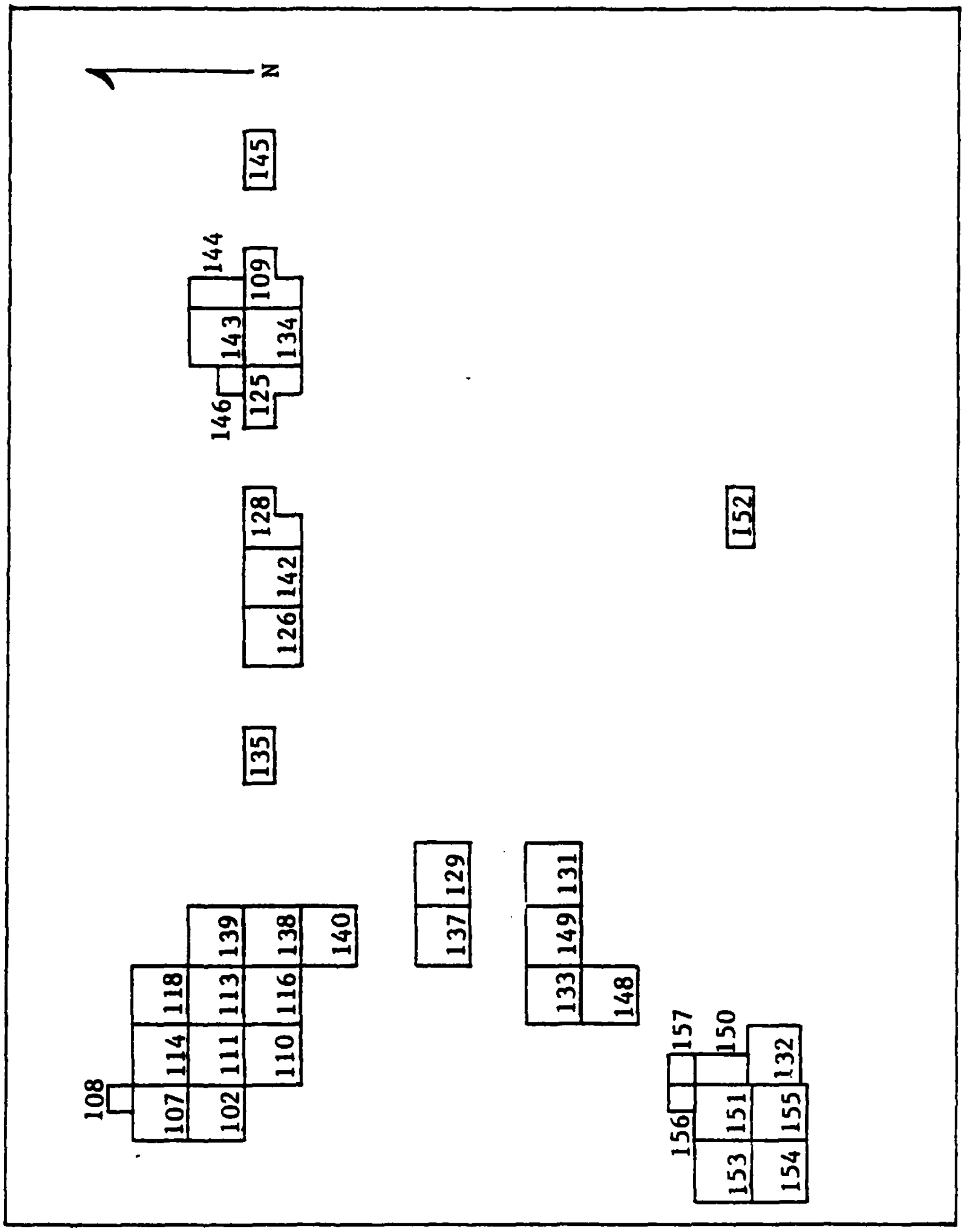


Figure VII-30. Distribution of walnut in Cultural Series 2B.



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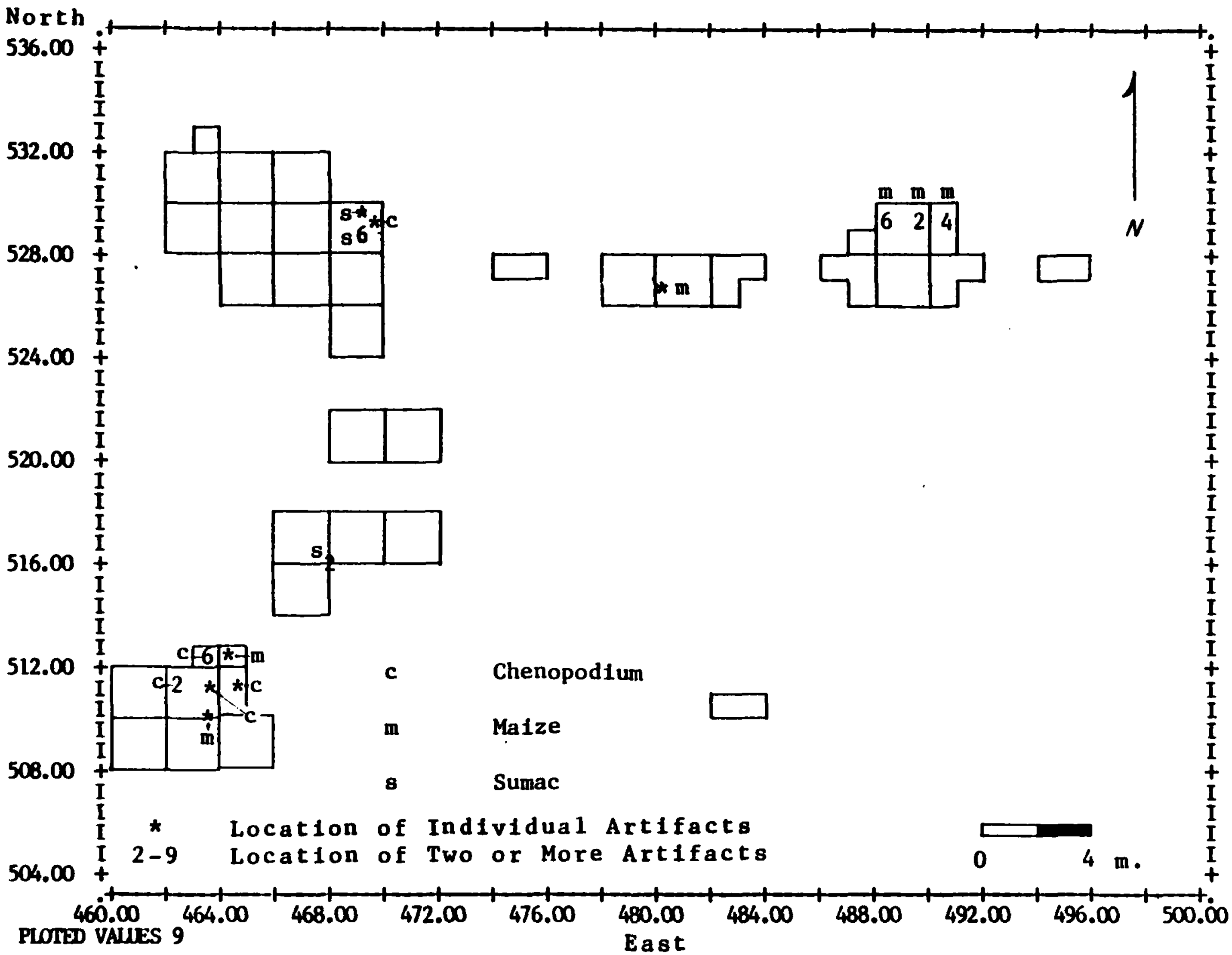

Figure VII-31. Distribution of chenopodium, maize and sumac in Cultural Series 2B.

Generally, a variety of seeds was found scattered in many of the features discussed above but were densest immediately east of Structure 1. Undoubtedly, some of these were utilized prehistorically while others may only reflect a portion of the natural local environment.

Chronology: Area 2, Cultural Series 2B

Excluding occasional extraneous projectile points, the majority of the diagnostic point types from the intact deposits of Cultural Series 2B primarily included varieties of weakly side notched points which are considered to affiliate most strongly with the Owl Hollow Phase (ca. A.D. 200-600) to the south. Diminutive bipolar drills from the area are also considered to be characteristic traits of this phase. As mentioned previously, the presence of some Copena-McFarland and Archaic point types from the surface collection and the plowzone and subplowzone excavations indicate some utilization of the area during earlier times or, alternatively, re-use of earlier point types by the Middle Woodland occupants.

Ceramic types from Area 2 appear in relatively high density from both the surface and the subsurface zones. Much of the assemblage (the limestone tempered diamond-shaped stamp type and the notched-rims type sherds) resembles Owl Hollow Phase ceramics, though limestone tempered rectangular check stamped sherds of the McFarland Phase show an earlier occupation and a few shell tempered sherds represent the later Mississippian Period.

Three radiocarbon samples recovered from the subplowzone deposits in Area 2 were processed. A wood charcoal sample from Feature 39, a rock-lined pit dates 40 B.C. +/-50 (Beta 4126). Wood from a post hole (Feature 12) in Structure 1 dates 780 +/-70 (Beta 4125). A black walnut from Feature 31 and a black stain dated to 875 +/- 400 (UGA 4125).

The 40 B.C. +/- 50 date is too early for the Owl Hollow Phase but does fall into the McFarland Phase. The later dates of A.D. 780 +/- 70 and A.D. 875 +/- 400 fall on the other extreme and are too late to fit into the known Owl Hollow Phase. (Three other samples were also processed without results due to the small sample size.) The early date is the only processed radiocarbon sample that associates well with any diagnostic point types and ceramics from the South Block excavation.

Both the absolute radiocarbon dates and the relative chronological placement of the diagnostic artifacts (which are classified on the basis of the McFarland-Owl Hollow phases) concur with a time span of 100 B.C. to A.D. 600 for the activity area excavated in the South Block. However, the majority of the diagnostic materials support a much stronger affiliation with the earlier Owl Hollow Phase time span of A.D. 200 to 400. Of course, it is likely that the occupational loci defined in the South Block is simply a local manifestation of a McFarland-Owl Hollow transitional phase or even a local Middle Cumberland Valley development which simply had some affinities with these phases to the south. These questions are addressed further in Chapter VIII.

Several explanations need to be considered for the temporal extremities of these radiocarbon dates. First, it is likely that the dates have been contaminated, thus affecting a more accurate temporal reading. Recent information on contamination factors in the region under study has come to light. A high level of radioactivity, due to uranium content, found in various shale belts (such as the New Albany belt of central Kentucky and the Chattanooga belt of northern Tennessee) can substantially contaminate radiocarbon samples, producing a date more recent than expected (Turnbow 1982). Until a uranium contamination factor is definitely proven in the Middle Cumberland River Valley and calibrated for correction of processed samples, then the radiocarbon dates from the Hurricane Branch Site must be accepted with caution. Second, other specific problems exist with these dates. Any one of the dated radiocarbon samples may represent intrusive materials from earlier or later deposits as a result of either natural or cultural processes. For instance, the wood from the post hole in Feature 12 (found in Structure 1) could be a Late Woodland or even a Mississippian Period feature which intruded into the structure. Another problem exists with the A.D. 870 +/- 400 sample for the standard deviation is too large, making the date somewhat unreliable.

On the other hand, if we were to accept the dates as reliable absolute time markers, then several cultural implications are worth noting further. The 40 +/- 50 B.C. date may substantiate contact with the McFarland Phase peoples to the south. Although the standard deviation of +/- 50 on this date is small, the date coupled with the Copena-McFarland point types and rectangular check stamped sherds of the McFarland Phase and with the weakly side-notched points and ceramic types affiliated with the Owl Hollow Phase may collectively be indicative of a transitional McFarland to Owl Hollow Phase affiliated occupational loci in the South Block area. However, the two later dates may only represent a late manifestation of the Owl Hollow Phase at the Hurricane Branch Site; one that can be accounted for by cultural lag in, migration of southern people into, or diffusion of Owl Hollow ideas into the Middle Cumberland River Valley.

Unfortunately, little is known about the distribution of McFarland and Owl Hollow Phase sites beyond the Tennessee River drainage, or for that matter, in the lower portion of the Tennessee Valley. It is possible that the McFarland and Owl Hollow patterns are spatially more widespread and chronologically more persistent than the current data indicates. Until these phases are better understood on a regional level and the Hurricane Branch Site is reconciled with chronological sequences of the Middle Cumberland River Valley, a more precise temporal ordering cannot be provided.

Conclusions and Interpretations: Middle Woodland Component (Cultural Series 2B)

The intent here is to discuss and interpret the overall activity structure of the features, midden and artifact assemblage from the South Block excavation in Area 2. The above discussion on chronology has interpreted the South Block component primarily as a Middle Woodland occupation most strongly affiliated with the early Owl Hollow Phase (ca. A.D. 200 to 400) further south in Tennessee. (A more precise discussion of the affiliation is provided in the following chapter on regional relations.)

It should be stressed again that although the majority of the associated artifact assemblage and particularly the concentrations of features recorded in the South Block excavations are assigned to the Middle Woodland Period, there are lithic and ceramic data from the surface and subsurface artifact collections to show that earlier and later occupations were also performing activities in Area 2. However, it is our contention that Middle Woodland [the early Owl Hollow Phase time period (A.D. 200-400)] people produced the structural activity area recorded in the South Block. It is further believed that this activity area is the dominant cultural remnant not only in Area 2 but the total site as well. The combined surface collection, backhoe trenches, test pits, block excavations, shovel probes and soil auger tests employed across the entire site area did not record any other concentration of features, midden and artifact assemblages on a scale comparable to Area 2. Where comparable artifact densities were reported on the surface of the site, test units and block excavations were executed. These areas were the North Block, Area 1 and the Units 105/112 excavation, Area 3. Yet, as the previous analyses show, excavation in these areas failed to produce the abundance, type and variety of cultural features and materials found in the South Block.

Thus, the following synopsis will hypothesize on the internal activity structure of the South Block excavation as the primary occupational loci in the site and further specify the importance of this data in light of its structured spatial pattern as an activity area.

The highest concentration of features at the site occur in the South Block, Area 2. Examination of the type and distribution of features in this area reveals a structured pattern which is suggestive of a specialized activity area utilized during the Middle Woodland Period. The primary features in this area are the three (Features 7, 8 and 30) black stains near the river bank, which are rather large in size and amorphous in shape, albeit not completely exposed by excavation, and Feature 31 near the crest of the ridge in Area 2. This general shape and form of the black stains are best defined by Feature 31. Other features, such as fired areas, rock-lined pits, rock concentrations, postholes (including one architectural structure), pits, and charcoal concentrations are present around the fringes of these black stains. One pattern worthy of particular attention is the lack of intrusive features in the black stains. Other features occurring around these stains show little disturbance and, in essence, do not spatially overlap. Given the relatively tight cluster and structured spatial pattern of all features in the area, the general absence of superimposed features and disturbance (which may result from later occupations) and the same stratigraphic context of these features, it may be assumed that many or all of these features were associated with multiple but integrated tasks focused on one primary occupational episode during the Middle Woodland era.

As discussed in Chapter VI the black stains are not interpreted as living floors. Their irregular shape and the absence of features, postholes and distinct artifact clusters, which might be suggestive of living surfaces, negates this interpretation. The stains are not viewed as burned areas for they generally contained only a moderate amount of fire-cracked rock, ash and charcoal. It is interesting, however, that it is the areas around the stains that exhibit features and middens indicative of domestic surfaces such as tool maintenance and food preparation areas.

As discussed under each artifact category above, there seems to be no particular cultural material assemblage specifically associated with these stains unless it be the presence of bifaces and occasionally fire-cracked rock and ceramics. With the exception of these cultural materials, all other artifactual types occur in low frequency in the stains and are most prevalent in the outlying features and midden areas.

It should be noted that variable amounts of artifacts were recovered from the stains. In part, this is explained by the differential size of these features. On the other hand, it need not be expected that all black stains should contain the same type and frequency of artifacts; for although they may have served the same function, each stain may represent varying degrees of intensity of use and thus yield variable amounts of cultural material. The most important pattern to consider is that some of the black stains are similar in artifact content and are bordered by similar types of features and midden.

The black stains are not considered to be middens. There is a very clear distinction between the stains and the surrounding midden; and, even if the former were considered to be the latter, then the stains must be regarded as having been associated with a very different type of activity to have produced the black organic effect so characteristic of these features. Also, it would be superflous to assumed that the stains, as a possible specialized midden, would be so spatially discrete, well-defined and bordered by a series of different but associated features. Furthermore, the stains do not contain the same diversity and type of artifacts found in the middens or for that matter the high content of ash and charcoal one would expect to find.

Thus, it is our contention that the black stains are the result of spatially designated areas where organic materials were processed and later decomposed. Since preservation in the area is good and since few faunal elements were recovered from the stains, the decomposition of animal elements can be ruled out. Additionally, the lithic assemblage within and around the stains reveals no preoccupation with hide or meat preparation. The floral remains from the South Block excavation, however, are striking in both quantity and state of preservation. Taking into consideration the previously noted sampling biases of the floral recovery strategy, more than 90% of the total floral collection analyzed to date from the site came from in features and middens around the black stains. The current data shows that a lower percentage of plant remains have been found within the stains.

More specifically, the South Block area is viewed as a work zone where a series of plant-related tasks were performed. As discussed in previous chapters, the biotic zones in close proximity to the Hurricane Branch Site would have provided an abundance and variety of edible feral plants for collection, particularly during the spring and fall seasons of the year. Cultigens would have been planted and harvested from the late spring to the early fall months. Thus, both the collection of wild plants and the production of cultigens could have been synchronized economic activities over a period of several months.

The South Block area was most likely a staging zone for spatially centralizing plants that had been collected and harvested at various times during these months. The specific inference here is that the black stains are compost areas where the vegetal debris decomposed after collection and further processing. (It is not implied that these compost zones were intentionally produced for purposes of yielding an organic fertilizing constituent in the soil, but rather that these zones were simply the decomposed organic end-result of vegetal debris which had been collected and processed.)

Features surrounding the black stains (i.e., rock concentrations, fired areas, possible storage pits and charcoal concentrations) are interpreted as specifically designated "spots" for different tasks related to plant preparation prior to storage, cooking or transportation elsewhere. The tool assemblage, including normal and aborted cores, bifaces, flakes and utilized flakes could have been used to cut, scrape, chop and prepare vegetal materials in other ways. The function of the associated ceramic assemblage also fits well with these tasks.

It is interesting to note that ground stone artifacts were relatively rare on the site and particularly in Area 2. Ground stone tools were generally recovered from the surrounding midden, rather than from features. It is quite probably that these tools were employed in plant processing activities, but on-the-spot food preparation for consumption is not well-demonstrated. However, it should be noted that the ethnohistoric literature on many historic Indian groups (Swanton 1979) shows that wooden implements were equally, if not more, important for food preparation. Nevertheless, the scant evidence for tools representative of food preparation might suggest that vegetal materials were primarily collected, harvested and processed for storage and/or tranportation for later consumption at localities other than the Hurricane Branch Site. The lack of a large occupational loci during the Middle Woodland Period tends to support this contention.

It is assumed that some of the bifaces and certainly the projectile points and faunal remains recovered from the area are associated with hunting practices and meat consumption, but probably as a secondary food procurement activity for inhabitants of the area.

There is no evidence other than Structure 1 in Area 2 to suggest that a large population inhabited the site during the Middle Woodland Period. When considered in light of the overall activity structure of Area 2, the architectural feature may be the domestic residence of a small farmstead or even served as a temporary shelter for a small group of people working in the area. The two burials recorded in the structure are suggestive of a rather prolonged occupancy of the structure. Yet, the few storage pits do not attest to a lengthy stay.

Another consideration here is the organized laboral implication of the activity structure observed in the South Block excavation. If we accept the interrelated functional tasks inferred from the feature and artifact assemblage data, then a designated work zone for a specialized series of plant collection and preparation tasks can be supported. Needless to say, the tightly knit spatial organization of features (and the absence of superimposed features) and the abundance of variable plant species types from both the features and the surrounding middens suggest a centralized labor area focused on a series of plant related tasks which were not recorded in any other area of the site or for any earlier time period.

The placement of this specialized work zone near the river bank may be the result of a desired spatial proximity to the closest water source which may have been used in the processing of plants. Location of the zone along the river may also relate to use of the ridge and ridge slope as a possible gardening area.

It should be recalled that the intersectional space between Areas 2 and 3 along the eastern slope of the ridge yielded a low artifact density in both the plowzone and subplowzone deposits. This slope would have been a highly suitable garden area for growing the cultigens whose seeds were recovered from the site. Interpretation of the slope as a garden field would certainly explain the low frequency of materials in the area and possibly the spatial proximity of the vegetal work zone to the west.

Moreover, it was mentioned earlier that during Archaic times this ridge and slope was not stabilized and thus probably not utilized extensively by Archaic (and possibly even Early Woodland) peoples. As the area became more stabilized through time and intermittently utilized by Woodland peoples, it also would have served as the area most conducive to plant cultivation.

To summarize, Area 2 is interpreted as a specialized plant processing zone probably utilized by a relatively small group of people during Middle Woodland times. Activities in this area are believed to have been performed in congruence with similarly related plant collection and growing practices in adjacent biotic zones and areas of the site. Although the majority of the collected information on the spatial structure of feature types and artifact assemblages supports this primary activity, other secondary tasks, such as hunting and meat consumption, tool maintenance and domestic occupation are also indicated. Too, the combined data from the South Block area reveal a specific spatial organization of laboral tasks not observed for prior periods of occupation at the site.

The primary activity structure in the South Block area is viewed as a single cultural episode during the Middle Woodland Period. The present evidence suggest that a small group of people performed a limited and specialized plant processing activity from the spring through fall months of the year either permanently inhabiting the site or making occasional sojourns to work in the area. Work activities concentrated primarily on the collection of feral plants and the harvesting of cultigens and secondarily on hunting/meat preparation as a food consumption task. It is not known whether the interpreted cultural events took place during one seasonal span or were repeated over a period of several years. Artifactural debris indicative of occupation during the earlier McFarland Phase and the later Mississippian era are envisioned simply as periods of minor utilization of Area 2 but not so intensive and specialized in nature that they produced the activity structure related to a McFarland Phase-Owl Hollow transitional era or an early Owl Hollow Phase.

Lastly, it must be stressed that the above interpretations concerning the limited and specialized type of plant related activities in Area 2 are open to revision at the completion of a thorough analysis of the floral remains from the Hurricane Branch Site. This final study should enhance the botanical structure observed in Area 2. It is not expected, however, that this work will alter the major patterns discussed here. Along these same lines, it is unfortunate that detailed soil analyses were not performed on samples from the black stains and surrounding midden areas. Such work would possibly have provided more information on the organic staining effect of the soils and better definition of the seasonality of occupation. Hopefully, future work will resolve this issue.

Archaic to Woodland: Continuity and Change

Although the data base is variable for the occupational sequence of the site, we can hypothesize general diachronic developments in the following way. The Hurricane Branch Site was intermittently occupied from the Early Archaic up to the Mississippian Period (the latter is based on the recovery of shell tempered pottery in the plowzone) with relatively intense activities taking place in the Middle Woodland. From the Early Archaic to the Early Woodland the site was seasonally occupied by small groups of people. Primary activities included food procurement and processing, probably of both plants and animals with the majority of activities most likely taking place between late spring and late fall. There is no direct evidence to show that people were occupying the site during the winter months; however, the site sampling strategy and state of preservation of other organic types may have prevented adequate assessment of this possible seasonal period of occupation. It is possible that the population shifted to the uplands or secondary valley to pursue animals such as deer, turkey and bear which congregate in this oak/hickory forest during the colder months of the year.

There is virtually no evidence to indicate any shifts in subsistence strategy for a period of roughly 6,000 years or so; although it is presumed that a heavier reliance on a greater variety of plant species was incorporated into the aboriginal diet during the Early Woodland Period. Around the first millennium B.C., plant exploitation became more diversified. In addition to arboreal nuts, new flora began to appear in the archaeological record. This general process of expanding the food base probably began in the Middle to Late Archaic as it did in other areas of the Eastern Woodlands, but there is no substantial evidence for it at Hurricane Branch. By the second century A.D., inhabitants who had contact with the people of the Owl Hollow culture were exploiting maize, sunflower, maygrass, goosefoot and squash.

In the local environment there were a variety of resources located in the uplands, riverine and marshy areas which probably attracted people through the centuries. However, sometime near the Late Archaic/Early Woodland, man began to change his subsistence strategy. Undoubtedly, the land and rivers produced much the same resources in the Early Archaic as they did in the later Mississippian. But larger events, including increased plant husbandry, were accepted into the local lifeway, changing the man-land relationship. The ridge, which forms a prominent physiographic feature on the site, would have afforded a good gardening area for agriculturally oriented semi-sedentary groups. The activity structure reflective of the black stain and other features in Area 2 suggest that specialized work zones were selected for plant processing. Hunting assumed a secondary exploitative role. Many of the changes observed at Hurricane Branch probably became the basic pattern, with elaboration of course, for the incipient Mississippian subsistence pattern which would shortly follow in the Cumberland River Valley. Conversely, the basic similarity in stone tool assemblages between the Early Archaic and the Late Woodland testifies to the success of the basic hunting/gathering lifeway and the adaptability of man and technology to the local environment.

Part of this continued and changing adaptability to the local environment was a more precise definition of interrelated laboral tasks, which were spatially confined to a primary work zone, such as that interpreted for the South

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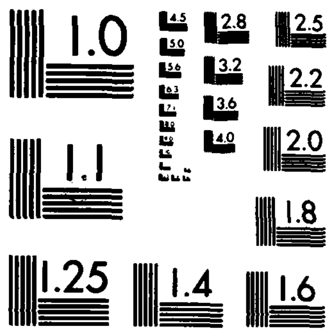
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Block excavation, Area 2. Although the archaeological data for the Archaic Period and Early Woodland era are limited, the organization of different domestic activities seem to be more dispersed and less defined spatially. By Middle Woodland times, a structured and more precisely defined pattern of space use in regard to laboral tasks is evident. Of course, the diachronic patterns observed here for each time period may represent changing settlement patterns on a broader regional scale whereby the inhabitants who occupy the site during the earlier Archaic and Early Woodland periods may have been performing activities from a scattered base camp occupation at the Hurricane Branch Site while the limited activity interpreted for the Middle Woodland occupation may represent only one specialized activity that was part of an extended settlement system elsewhere in the Middle Cumberland River Valley and adjacent uplands.

The possible socio-cultural relations that the Hurricane Branch had with other local sites as well as with external cultures in adjacent regions is the subject of the following chapter.

CHAPTER VIII

EXTERNAL CORRELATIONS

by
Nancy O'Malley
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Introduction

The purpose of this chapter is to discuss the placement of the Hurricane Branch Site within a regional framework of cultural history. As preceding chapters have detailed, evidence is available for occupation of the site at various times from the Early Archaic through the late prehistoric era. The nature, duration and frequency of these occupations undoubtedly varied substantially through time. While we cannot be specific and unequivocal concerning the details of the extensive occupational history of the site for all time periods, certain occupations were intensive enough that considerable information was recoverable through excavation. These will be emphasized in the following sections; however, an attempt will be made to relate the site's history to as many external affiliates as possible.

Archaic Affiliations

Cultural Series 1C and 3C (as defined in Chapter VII) comprise the Archaic component at the Hurricane Branch Site. Diagnostic Archaic artifacts from Series 1C include single examples of Kirk, LeCroy, Pine Tree, Morrow Mountain (Round Base, Elongate) and Big Sandy projectile points. These specimens suggest a primarily Early Archaic affiliation for the first three and a Middle to Late Archaic date for the last two types. Some admixture of later projectile point types (a single Copena specimen and two Copena triangular points) and a few limestone tempered sherds also occur in the two series, but these artifacts apparently have been displaced from later overlying contexts.

The remainder of the lithic assemblage from Series 1C and 3C (best represented in 1C) includes manufacturing debris, ovate and triangular bifacial preforms, a variety of systematically modified flakes suitable for cutting and scraping or planing, a few unifaces, a "chopper," battered, abraded and pitted stones and a hematite-stained grinding slab.

Two rock clusters (Features 19 and 23) were assigned to the Archaic component on the basis of their placement in site stratigraphy. While Feature 19 contained only lithic debitage and burned and unburned rock, Feature 23 yielded litic debitage, an unidentified expanded stem projectile point fragment, a larger pitted stone, hickory nut shell fragments and burned and unburned rock.

Based on the artifacts and features associated with the Archaic series, one may infer the Archaic occupants utilized the site while engaging in hunting, nut collecting and processing, tool manufacture (and probably some maintenance), possibly some hide preparation and other domestic tasks typical of small, rather short-term encampments. The duration and frequency of site occupation during the earlier phases of the Archaic Period is difficult to establish from the limited data base; however, several of the projectile point types have been affiliated with well-dated complexes in the Little Tennessee, Ohio and Kanawha River valleys. Specifically, Kirk projectile points date prior to 5000 B.C. at the Longworth-Gick Site on the Ohio River in Jefferson County, Kentucky, and from 7500+ B.C. to ca. 6900 B.C. in sites along the Little Tennessee River (Chapman 1977:166). Similar dates for strata containing Kirk points have been reported by Broyles (1966, 1971) for the St. Albans Site.

The Bifurcate Point tradition exemplified by the Lecroy specimen is considered to be developmental from the Kirk Corner Notched tradition in the Little Tennessee River Valley (Chapman 1977:166). Chapman (1977) dates this phase at 6300 B.C. This date correlates closely with the sequence from the St. Albans Site (Broyles 1966, 1971). The Pine Tree specimen is of uncertain affiliation although Cambron and Hulse (1975:104) assign it to the Early Archaic.

The Morrow Mountain (Round Base, Elongate) and Big Sandy point types have been placed within the Middle Archaic and late Middle Archaic through Late Archaic, respectively, based on excavations at the Eva Site (Lewis and Lewis 1961) and Stanfield-Worley Shelter (DeJarnette et al. 1962:81). Chapman (1977:164-165) reported a somewhat earlier date for the Morrow Mountain Phase at the Icehouse Bottom Site. He suggests that these points may have been in use by 5000 B.C., which is about 500 years earlier than dated occurrences to the west and southwest.

Several other examples of Early and Middle Archaic points were recovered from plowzone or surface contexts. Since these specimens are not affiliated with stratigraphically discrete Archaic levels, they can only be mentioned as additional evidence of Archaic utilization of the site. Early Archaic types from these contexts include LeCroy, Morrow Mountain (Straight Stem), Rowan-like, Stanly Stemmed and Lost Lake specimens. Middle Archaic types include two Morrow Mountain varieties. These points relate generally to the traditions described above.

Finally, Early Archaic Palmer points associated with the Woodland component at the site were also recovered. One of the specimens was reworked into a scraping tool. Since these points are morphologically similar to the side notched varieties typical of the Woodland component, and reworking is apparent, one may speculate that the Woodland inhabitants reworked these points.

Subsequent sporadic Archaic utilization of the site is evidenced by the occurrence of other later Archaic projectile point types, including Pickwick, Brewerton Side Notched, Eva II, Motley, McWhinney-like, Wade and Ledbetter. These usually occur in plowzone or surface contexts although a few occur in the Woodland deposits. A fair number of types transitional between Late Archaic and Early Woodland times also provide evidence of continuing sporadic visits to the site. These and previously mentioned projectile point types are suggestive of predominantly southerly affiliations during the Archaic Period, although some contact with the Ohio Valley is evidenced by the McWhinney, Brewerton, Adena-like and Motley styles. There is no evidence to suggest that use of the site during this long time span was anything other than sporadic and short-term, leaving only ephemeral traces in the archaeological record.

Woodland Affiliations

Evidence for site use throughout the Woodland Period may be inferred from the artifactual assemblage; however, the bulk of the occupation appears to have taken place in the Middle Woodland Period. The purported Early Woodland types from plowzone/surface and Woodland contexts include Flint River Spike, Montgomery Stemmed, Dickson, and Nolichucky. None of these types are securely dated within the Early Woodland; therefore, affiliations for this time period are unclear. The possibility of contact with Adena cultures in central Kentucky is evidenced by the Montgomery Stemmed point which is similar to those recovered from the Robbins Mound in Boone County, Kentucky. The Dickson point is similar to examples in the Wabash River Valley of Illinois (Montet-White 1968:64; Winters 1963). This possible contact may foreshadow subsequent Middle Woodland affiliations to be discussed next.

The Middle Woodland component at the Hurricane Branch Site is best defined by Cultural Series 2B and 3B with the former yielding the best sample. Plowzone deposits also yielded evidence of the Middle Woodland occupation. Of all the occupations which were documented by the Hurricane Branch data assemblage, this component appears to reflect the most intensive and long-term use of the site. Clearly, Middle Woodland occupation of the site reflects a behavioral shift in the manner of landscape utilization from earlier occupations. Visits to the site previous to this time are marked by accumulations of artifacts but very few structured features (only two were recovered from Archaic levels). The Middle Woodland occupation, however, generated a spatial pattern of differential artifact clustering and features representing a much more structured behavioral mode than is descernible in prior occupations. A variety of activities, both discrete and overlapping, indicate particular attitudes concerning the use of space, including work areas for tool manufacture, manipulation of vegetal foodstuffs, domestic residence in the form of a small light structure and other related domestic tasks.

The lithic assemblage associated with this component includes a series of projectile point types affiliated with the earlier part of the Middle Woodland, including Copena, Copena Triangular, and Candy Creek. Somewhat later styles also occur in the form of a series of side notched types (Side Notched 28-30, and 32 in this report) from the stratigraphically discrete Woodland deposits and Manker Corner Notched, Manker Stemmed, Coosa, Jack's Reef Corner Notched, Snyders and Lowe types from plowzone and surface contexts. These points are associated with manufacturing debris, a variety of bifacial preforms in ovate and triangular forms, numerous systematically modified flakes, a few unifaces, drills, very few reworked tools, battered and pitted stone, celts and a drilled gorget fragment. Also included in the assemblage are limestone tempered ceramics with plain, cord-marked, simple stamped, complicated stamped, check stamped, and net impressed surfaces, Keys Plain specimens and quartz tempered ceramics with plain or simple stamped surfaces. A total of 46 cultural features, including postmolds (forming a small semi-circular structural pattern), shallow pits, hearths, etc., are also associated with the Woodland deposits in Series 2B.

Several external affiliations are evident from the Woodland data. These include the Cumberland River drainage, the McFarland-Owl Hollow continuum recognized in the Normandy Reservoir, and the Allison and LaMotte cultures of the Wabash River Valley in Illinois. Each will be discussed individually.

Affiliations Within the Cumberland River Drainage

Knowledge concerning Middle Woodland utilization of the Upper/Middle Cumberland drainage is quite sparse as a result of very little systematic survey and excavation having been performed. However, archaeological investigations in the Salt Lick Recreation Area of Cordell Hull Reservoir located in Jackson County, Tennessee, documented Site 15JK33 which contained material remains somewhat similar to that of the Hurricane Branch Site (Ball 1979). Ball (1979) reports the presence of a structure which closely resembles Structure 1 at Hurricane Branch. Ball's structure measured roughly 4.6 m E-W by 4 m N-S. A post from this structure was radiocarbon dated at A.D. 675. In addition, he recovered limestone tempered plain sherds which were identified as Mulberry Creek or Hamilton Plain (A.D. 264 - A.D. 625) from a postmold and the surface. While the site was multicomponent, Woodland Period ceramics and projectile points along with scrapers, blank/roughouts, debitage and burned limestone were identified in the plowzone level of a 5 x 5 foot test pit. The structure and cultural remains were approximately confined to an organic-rich midden revealed in a road-cut.

Another site (40JK3A) in the recreation area yielded limestone tempered, smoothed-over cordmarked ceramics identified as either Hamilton Cordmarked or Flint River Cordmarked. These occurred in a fire basin feature which was dated from a single block of charcoal at 30 B.C. by the University of Georgia and at A.D. 745 by Geochron. Two other features at Site 40JK3A were identified as fire pits, but no diagnostic artifacts were recovered.

In any event, the structure at Site 40JK33 and the ceramics and features from Site 40JK3A indicate the presence of occupations roughly contemporaneous with and near the Middle Woodland component at Hurricane Branch. One may speculate that small sites with simple structures and various cultural features associated with rather noncomplex occupations represented a portion of the Middle Woodland settlement pattern in this portion of the Cumberland River drainage.

The only other site in the Cumberland River drainage described in the literature to date which compares favorably with Hurricane Branch is the Shambles Site in Stewart County, Tennessee. The Shambles Site contained a Mississippian mound and a Late Woodland occupation area, which is indicative of more complex land use than the Hurricane Branch Site. However, both sites are close to a marshy area. At Shambles, this physiographic feature was located about 50 m from the site. Both Woodland sites are situated on the river bank. Test units in the river bank at

Shambles revealed a sterile tan soil overlying a very deep deposit of "dark grey, hard, gumbo sterile also except for occasional charcoal flecks" (Coe and Fisher 1959:29). This phenomenon is similar to the dark stain features at the Hurricane Branch Site. The difference in artifactual remains, such as the total lack of botanic specimens and artifacts in the Shambles "gumbo," may only reflect variable recovery techniques.

Unlike Hurricane Branch, the Woodland pottery at Shambles is commonly clay and "grit" tempered and designated as Mulberry Creek Cordmarked, McKelvey Plain and Harmon's Creek Complicated Stamped. These ceramics are usually considered primarily Late Woodland in date. Less common are the Hamilton Plain, Candy Creek Cordmarked (which is more frequent than Hamilton Plain), and rare Wright Check Stamped wares. While only a few of the projectile points at Shambles were Woodland in origin, they were all expanded stem types (or what might be referred to as weakly side notched). In their preliminary analysis Coe and Fisher (1959) assigned the Shambles Site to the transition between the Woodland and Mississippian. However, the similarity between the Shambles "gumbo" and the black stains at the Hurricane Branch Site may reflect similar functions taking place.

Affiliations Outside the Cumberland River Valley

Of the few well-defined Middle and Late Woodland phases known in the Ohio Valley and Middle South, the McFarland/Owl Hollow offers the closest comparisons to the Hurricane Branch assemblage. Investigators at the University of Tennessee have carried out extensive archaeological investigations in the Normandy Reservoir area, resulting in the delineation of two phases of Middle Woodland occupation.

The earlier McFarland Phase is dated from ca. 150 B.C. to A.D. 200. Sites associated with this phase tend to be small encampments with few structures, shallow storage pits, and limestone hearths. Typical artifacts include lanceolate or triangular projectile points similar in style to Copena or Copena triangular types, and limestone tempered ceramics with fabric-marked surfaces early in the phase, cordmarking during a brief time of possible Hopewell interaction and check stamping (Wright Check Stamped) later still. Similarities to the Copena culture are notable in the projectile points. Old Stone Fort, a Hopewellian ceremonial enclosure, has also been suggested to date to the McFarland Phase.

The Hurricane Branch Site yielded numerous examples of Copena and Copena Triangular projectile points and some Wright Check Stamped sherds were associated with the Woodland component; however, they were not discrete from other later Middle Woodland indicators. Therefore, a separate McFarland occupation is possible but difficult to unequivocally establish.

Better evidence is available for an Owl Hollow affiliation at the Hurricane Branch Site. The Owl Hollow Phase is divided into three periods: Early (A.D. 200 - A.D. 400); Middle (A.D. 400 - A.D. 600); and Late (after A.D. 600). Subsistence patterns from Early to Late indicate an early reliance on a wide range of ecosystems with seasonal scheduling between feral plant collection and cultivation of squash and probably sunflower. Through time, a focus on floodplain terrace species developed along with the cultivation of maize.

During the early part of the Owl Hollow Period, sites are located in both floodplain and upland settings; however, middle Owl Hollow sites occur only on floodplains and late phase sites only in the uplands. This shift in settlement pattern is thought to be associated in some way with subsistence changes, population pressures, threat of alien groups or other cultural and environmental factors (Cobb and Faulkner 1977:130). Large villages with summer and winter structures, deep storage pits and durable earth ovens, and evidence of intensive long-term occupation are typical in the early and middle phases but decline in the later phase.

Finally, ceramics are characterized by limestone tempering with simple stamping (accompanied by plain) and notched rims dominant in the earlier phases and a gradual increase in plain surfaces by Late Owl Hollow times. Check and complicated stamping, cordmarking and incising occur as minor types in the Early and Middle periods.

In light of these traits, the Hurricane Branch Site fits best within the Early to Middle phases of the Owl Hollow complex. The ceramics exhibit a strong simple stamping tradition. Side notched projectile points and microdrills are also typical of Early to Middle Owl Hollow types. Botanical remains contain evidence of maize and squash and possibly Iva cultivation as well as collection of numerous feral species.

The Hurricane Branch Site differs from the Owl Hollow Phase in its lack of substantial structures, deep storage pits, large earth ovens, and other evidence of intensive occupation. Owl Hollow sites also contain massive amounts of vegetal remains usually in storage pits. The Hurricane Branch Site contained far less floral remains and no evidence of a strong emphasis on vegetal food storage. Owl

Hollow Sites appear to be related to intrasite and long-term occupation at one locus on a large scale whereas the Hurricane Branch Site only reflects a part of the larger system. The occurrence of the black stains particularly is indicative of specific functional differences at the Hurricane Branch Site as no comparable feat theures were recognized at Owl Hollow sites. Therefore, the site may represent either a component of the Owl Hollow settlement pattern that has not been recognized or does not occur in the Normandy Reservoir or it may be indicative of a pattern specifically associated with the Cumberland drainage. However, the presence of some type of link between the two areas is undeniable even though the nature of that contact is unclear. While Hurricane Branch inhabitants shared ceramic and lithic traits with Owl Hollow peoples, they were totally dissimilar with regard to settlement type. Yet they were cultivating and gathering the same foods and shared many artifactual affinities. Since the Hurricane Branch Site does not appear to have been occupied year round, it may represent a special activity site which has gone unnoticed in other Owl Hollow manifestations. Alternatively, the site may represent a separate though related Middle Woodland cultural complex which was not just a recipient but also a donor of cultural traits shared with Owl Hollow peoples in the Duck River Valley. Subsistence data from the Normandy Reservoir Owl Hollow sites document the cultivation of maize and squash with the former not occurring until A.D. 400 - 600. Given the rather narrow floodplain areas of the Upper Duck River Valley, it is possible that Owl Hollow peoples could most efficiently exploit the natural environment and cultivate crops from centrally based villages, thereby developing a more sedentary lifestyle. Differing drainage characteristics on the Middle Cumberland River may have dictated a more dispersed pattern involving greater and more frequent movement and an increase in site functional types. This hypothesis could account for the considerable differences in settlement type between Hurricane Branch and typical Owl Hollow sites. It is interesting to note that the Hurricane Branch Site appears to correspond more closely to the small occupations typical of the McFarland Phase yet the artifactual traits are more typical of the Early to Middle Owl Hollow Phase. An intriguing association is the occurrence of maize in what appears to be earlier contexts than for the Owl Hollow Phase in the Upper Duck River Valley. The significance of these associations may be quite important with regard to the inter-relationships of Woodland cultures in the mid-South. Given that early cultivation of various domesticates and sedentary lifestyles are fairly well-documented for such areas as south-central Kentucky around Mammoth Cave, the Middle Cumberland drainage may have been the locus for important early developments which played critical roles in the evolution of Woodland and later cultural manifestations elsewhere.

Finally, affiliations with the LaMotte and Allison cultures of the Wabash River Valley should be discussed. This discussion is linked to the previous one on Owl Hollow because of the strong similarities in material culture and community patterning which were first noted by Winters (1963) and later by Cobb and Faulkner (1978) between the two cultures. The closest relationship is between the LaMotte and Owl Hollow as both contain simple stamped pottery, expanded stem projectile points, rectangular stone gorgets, rectanguloid elbow pipes and bone pendants as well as a plaza complex. The Hurricane Branch data includes Lowe and other projectile points, simple stamped pottery and use of a rectangular gorget fragment which appear to relate to this cultural link. However, the nature of the contact is again not well-understood.

One possiblitiy is that the Middle Cumberland area served as a conduit of sorts through which cultural traits and ideas flowed. Certainly, the similarity in cultural traits between the Duck River Valley, the Hurricane Branch Site and the Wabash River Valley suggests that ideas and traits flowed more or less freely across and between the areas. The incorporation and specific adoption of these shared traits differ from drainage to drainage. Such a situation argues for some degree of autonomy as far as local cultural developments are concerned but also denotes a receptive attitude toward major socio-cultural innovations and changes taking place on an integrative regional scale.

Another issue related to links with the Wabash Valley concerns the influence of Hopewellian culture. Neither Owl Hollow nor LaMotte are considered to have participated to any great extent in the Hopewellian interaction sphere. The only evidence for any Hopewellian contact at the Hurricane Branch Site is the presence of projectile points similar to the Manker and Snyders styles described by Montet-White (1968) and associated with Hopewellian developments in Illinois. These specimens are few in number and, in fact, appear to be rather poorly executed imitations. One may infer from this data that while some traits may have reached the Hurricane Branch inhabitants, it had little or no effect on their lives.

Late Prehistoric Affiliations

The presence of a few Late Woodland/late prehistoric projectile points and minimal amounts of shell tempered pottery provides meager evidence of brief visit(s) to the Hurricane Branch Site late in the prehistoric period. No substantial occupation is indicated and the inconclusive nature of the remains precludes any substantive statements concerning the external correlations for this data set.

Summary

To conclude, the Hurricane Branch Site may be characterized as a multicomponent site which has been sporadically visited by Archaic cultural groups, most intensively occupied in the Middle Woodland and utilized briefly in the late prehistoric period.

Archaic affiliations are rather widespread for the earliest phases, ranging from the Ohio Valley to south Tennessee, but tena to be dominated by southerly influences through time.

Woodland affiliations continue to be southerly in nature with strong influences from the McFarland/Owl Hollow complexes of the Upper Duck River in southern Tennessee and more equivocal influences from the Wabash River Valley of Illinois. Hopewellian influences are so sparse as to be virtually negligible as are late prehistoric developments.

CHAPTER IX

EPILOGUE

by
Thomas D. Dillehay

Introduction

In Chapter II a conceptual framework for the expected types of socio-cultural changes and developments from the Archaic through the Mississippian periods was discussed as part of the archaeological research design for the Hurricane Branch Site. The patterns expected to occur in the archaeological record of the Hurricane Branch Site were derived from the types of previous data recovered from the site but particularly from general anthropological and archaeological knowledge on past hunter-gatherer and farming societies (see Chapter III).

Such a focus is considered to be necessary if we are to take locally recovered information (such as that excavated at the Hurricane Branch Site) and reconciliate it with other local data sources as well as regional and inter-regional levels of information and interpretation. Taking into consideration the limitations of this approach (such as deficiencies in the information retrieved from the Hurricane Branch Site, in regional data sets and in the different methodological and theoretical foci applied to these sets), the issues raised in Chapter II are believed to be relevant to a broader understanding of the systematically connected internal and external socio-cultural variables which might have affected the different levels of change and development experienced by the local prehistoric populations. Although the following considerations are speculative and more questions will be raised than answers resolved, perhaps a more precise definition of the potential contribution of our knowledge on the site will be gained from this discussion.

In light of this brief introduction we will return to the major conceptual issues initially discussed in Chapter II and briefly assess them in regard to the actual data recovered from and the socio-cultural patterns observed at the site.

Cultural Periods and Threshold Developments

It was expected that data relevant to long-term social, technological and environmental changes (i.e., including the initial adoption and presumably later increased dependence on food cultigens) would be recovered for at least the Late Archaic through the Late Woodland periods. As the research was performed in the field and the recovered cultural materials were analyzed and interpreted in the laboratory, it was further realized that the site was characterized by a multi-component occupational loci most strongly dominated by a Middle Woodland occupation. It is not precisely known whether this span of occupation is most strongly represented by intermittent or continuous human habitation by one locally developing society and culture or whether different groups from many different areas and levels of socio-cultural development inhabitated the site from time to time. Most likely it is a combination of both situations whereby different groups (some staying longer than others), representing slightly different variations of a similar developmental theme, account for the total inventory of cultural remains deposited and patterns observed at the site.

Perhaps we will never know the precise cultural affiliation of these groups or how long they really occupied the site. We have, however, gained an idea of the intensity of their occupation at the site by examination of the density and patterning of the specific artifact assemblages of each occupational locus and of the spatial extent and type of land use over time. From these data we also ascertained the types of activities and specific tasks performed at the site. More specifically, we have indications from the spatial segregation and density of the artifact assemblages and cultural features, such as that recorded in the South Block Excavation, Area 2, that at certain times and places within the site there occurred more intensive and specialized activities which seemingly did not take place beforehand nor were repeated to the same extent later. (We are assuming here that there is not another large activity area comparable to the South Block at the site.) Due to the above mentioned limitation of the data, it is difficult to determine at this time whether the single cultural episode that produced the pattens observed in the South Block was the result of a number of interrelated communities scattered up and down the Middle Cumberland River Valley, who occasionally utilized the site area, or whether this phenomenon was an idiosyncratic episode atypical of the region.

Although external connections are documented at the site, the type and magnitude of relations with outside influences and the extent and degree of these influences on the observed technological and economic changes and developments recorded at the site are indeterminable. However, if we exclusively concentrate on what these changes and developments are through time and space for the site, certain interesting problems can be discussed further. If we take the perspective of the site location as potentially exploitable land, then the cultural affiliation of incoming groups that sequentially utilized this economic source and the external influences they represent seem less important. It is the man/land use relationship from the view of technological, economic and social organization and utilization of space that concerns us for the moment.

As discussed in the previous interpretative chapters, a mixed economy of hunting and plant gathering was recorded for the Archaic and Woodland components in Areas 1 and 3. Minor gardening activities might have been part of the economic scenario but at present there is no direct evidence to document this practice. The diagnostic artifact types from excavations in these two areas are primarily representative of the later Archaic era. The Early Archaic Period is documented by the presence of surface collected projectile points across the site but primarily from Areas 4 and 5. Diagnostic lithics and ceramics from the North Block excavation, Area 1, can be accepted primarily as an early Middle Woodland occupational loci. In the Units 105/112 excavation, Area 3, it is difficult to determine from the artifact assemblage whether the component is Early or Middle Woodland, as the projectile point types can span either era. Furthermore, there were no Early Woodland ceramic types recovered from either the surface collection or the excavations. This is not to say, however, that there was no Early Woodland occupation at the site, but rather that it is not well-manifested archaeologically. Several reasons could account for this phenomena. First, the excavation sampling strategy might have missed an Early Woodland occupational loci. Second, Early Woodland activities at the site might have been minimal and occupied a marginal position to a larger occupational locus located elsewhere in the valley. And third, the Early Woodland era may simply have been a period of cultural hiatus in the valley and the Hurricane Branch location was never extensively utilized by people of this time period.

Whatever the case may be, it is clear that the expected increased reliance on cultigens (and the socio-economic patterns associated with this practice) did not occur during the Late Archaic or Early Woodland periods, but later in the Middle Woodland era. The specialized activity structure recorded in the South Block excavation of Area 2 reflects a major developmental threshold which is characterized by an increased reliance on plants in the local economy. The major changes associated with this development in the Middle Woodland Period are 1) a greater abundance of feral plants,

2) the appearance of various cultigens in the plant inventory, and 3) a well-defined spatial aggregation of features associated with the manipulation of both plant types.

Blending of Plant Resources: Feral and Domesticate

The previously existing plant gathering practice that was part of the economic round at the site during the Late Archaic and through the Early Woodland Period is interpreted as the seasonal, laboral and land use threshold through which the manipulation of cultigens was introduced. This earlier root activity would have provided an economically convenient structure for blending horticultural practices into the man/land use relationship suitable for the site. Although the collection of feral plants in different microbiotic zones would probably have entailed a more spatially extended activity than cultigens (which could have been grown on the site), the seasonal span of collecting both plant types as well as the work area required to process them (once collected and harvested) would have been the same. A centralized control zone for the synchronized seasonal exploitation and processing of both plant types is interpreted for the specialized activity area recorded in Area 2. Excluding the lithic materials indicative of hunting or meat preparation, all other stone tools, ceramic vessels and features in the South Block excavation would have been associated with plant processing. This aggregated area of control is considered to be the archaeological manifestation of a reconstituted man/land use relationship, possibly beginning as early as the Late Archaic Period but certainly becoming well-established in Middle Woodland times.

Another consideration worth entertaining here is a possible relationship between the degree of spatial segregation and diversity in type of artifact assemblages and features that comprise an activity area for the different occupational loci and the degree of generalized or specialized economy associated with these areas. For the Archaic Period we see a more generalized economy characterized by a presumably more mobile group who hunted and gathered and by a less diversified and spatially compacted activity area. In the Middle Woodland Period, we see a more specialized economy with a heavier reliance on plant manipulation and a possible reduced dependency on hunting and a more specialized and spatially segregated activity area. An equally important development would be the elaboration and intensification of these co-ordinated economic tasks into later periods.

Watershed Effect: Late Woodland and Mississippian Periods

It is intriguing that there is no cultural material evidence to support a Late Woodland habitational loci at the site and very scant information to document the presence of later Mississippian groups. If we consider the site location in terms of its land use potential for an increased dependency on food production, then we would expect to have had a more intensive and perhaps continuous occupation during these later periods. However, the data on the activity structure in Area 2 tends to suggest that this organized blending episode of plant types was indeed most likely an idiosynchronic economic endeavor performed by group(s) in the vicinity of the site location.

If we view this supposition from the perspective of populations who lived in the vicinity of the site area or who made seasonal or occasional sojourns into the river drainage, several major conditions can be conceived to explain the lack of later occupations that might have expanded on the land use variable. First, it is possible that the local environmental conditions in and around the Hurricane Branch Site were not particularly suitable for a more intensified plant collection/food production/hunting economy practiced by larger groups. (We have no factual proof to verify this condition and must simply consider it as an influencing factor.) A second likely possibility is that the inhabitants of the different occupational loci at the site were connected with other populations, all of which must have functioned within a regional circuitry of socio-economic relationships and have had access to open lands in numerous areas. For factors unknown at this time it is possible that developments taking place on a regional scale influenced the migration and settlement shifts of local population segments into other areas after the Middle Woodland Period; and, fortuitously, the site was either passed over or utilized lightly from about A.D. 600 to the historic era. The last point relates to the socio-economic changes that occurred within the site and their possible relation to external events.

It is interesting to consider that although the specialized blending of wild and domesticated plant processing was a major economic shift, there is no evidence to show that an accompanying major shift took place socially and demographically. That is, the apparent increased manipulation and production of vegetable foods at the site was not paralleled by an increased settlement size and reconstituted residential pattern. (We are referring here to domestic living arrangements and not laboral organization.) The only residential addition to the site is Structure 1 which as mentioned earlier might have served only as an abode for a small group working at the site. The evidence strongly indicates that the expected social and demographic consequences of an increased reliance on plant collection and cultivation never occurred. It was conceptualized in Chapter II that the adoption of plant cultivation coupled with existing food procurement means could have been followed by a time-lapsed change and development in community size and organization. The Hurricane Branch Site apparently did not experience such a consequence, but (as an outlying plant collection, growing and processing area) probably contributed to such community developments elsewhere in the vicinity of the Middle Cumberland River Valley and surrounding environs. Given that the site was never heavily occupied or developed into a base camp or semi-permanent to permanent village, we must assume one or a combination of the following circumstances:

1) that the environment of the location was conducive to occasional plant collection activities but not to land clearing-plant cultivation practice;

2) that the area of the Middle Cumberland River Valley under study was not heavily populated from Middle Woodland to Mississippian times and thus an extensive pattern of fields for crop production was not in demand; or

3) that the economically related activity episode recorded in Area 2 is simply an early manifestation of the combined harvesting of feral and domestic plants by outside groups, possibly McFarland/Owl Hollow Phase people, and when the process was better developed either by local groups or by outside groups, there were often floodplain areas better suited for this purpose.

The suppositions expressed above are to be considered tentative until more archaeological investigation, particularly extensive settlement pattern analyses, are performed in the Middle Cumberland River drainage and more knowledge is gathered on adjacent river drainages in the states of Kentucky and Tennessee. Research in these areas should generate interpretations from these other data to enhance our understanding of prehistoric change and development. It is hoped that some of the research strategies and observations contained in this report will be applied in future research at comparable sites.

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APPENDIX A

Memorandum of Agreement

Advisory
Council On
Historic
Preservation

1522 K Street, NW
Washington, DC 20005

MEMORANDUM OF AGEEEMENT

WHEREAS, the Nashville District, U. S. Army Corps of Engineers (Corps), proposes to sell approximately 65 acres of land within the Cordell Hull Reservoir, Jackson County, Tennessee, for public port and industrial use; and,

WHEREAS, the Corps, in consultation with the Tennessee State Historic Preservation Officer (SHPO), has determined that this undertaking as proposed would have an adverse effect upon the Hurricane Branch Archeological District, a property eligible for the National Register of Historic Places; and,

WHEREAS, pursuant to Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. Sec. 470f, as amended, 90 Stat. 1320) and Section 800.4(d) of the regulations of the Advisory Council on Historic Preservation (Council), "Protection of Historic and Cultural Properties" (36 CFR Part 800), the Corps has requested the comments of the Council; and,

WHEREAS, pursuant to Section 800.6 of the Council's regulations, representatives of the Council, the Corps, and the Tennessee SHPO have consulted and reviewed the undertaking to consider feasible and prudent alternatives to avoid or satisfactorily mitigate the adverse effect; and,

WHEREAS, Interagency Archeological Services (IAS), Heritage Conservation and Recreation Service, was invited and participated in the consultation process;

NOW, THEREFORE, it is mutually agreed that implementation of the undertaking in accordance with the following stipulations will satisfactorily mitigate adverse effects on the above-mentioned property.

Stipulations

The Corps will ensure that the following measures are carried out.

1. The Corps will condition the quit-claim deed on the delay of development in the area that is sold in order to permit the implementation of the archeological data recovery program outlined in the attached letter of August 25, 1980, from E.C. Moore, Chief, Engineering Division, Nashville District (Attachment 1).

2. Prior to initiation of any construction or development activities which could affect archeological site 40JK27, a data recovery program

will be developed and carried out in accordance with the scope of work prepared by Interagency Archeological Services, Heritage Conservation and Recreation Service (Attachment 2), 36 CFR Part 66 (Attachment 3), and Part III of the Council's Handbook, "Treatment of Archeological Properties" (Attachment 4).

3. Prior to initiation of any construction or development activities which could affect archeological sites 40JK28, 40JK29, 40JK30, and 40JK31, a data recovery plan or plans will be developed consistent with the Council's Handbook, "Treatment of Archeological Properties" and 36 CFR Part 66. The plan(s) will be provided to the Tennessee SHPO and the Council for review and approval. If neither the SHPO nor the Council objects within 30 days after receipt of such plans, the Corps will ensure that the plans are implemented. If either party raises objections, the Corps will consult with the SHPO, the Council, and Interagency Archeological Services to resolve the objections.

4. All archeological work will be conducted under the direct supervision of an archeologist or archeologists who meet, at a minimum, the qualifications set forth in 36 CFR Part 66, Appendix C (attached), and who have knowledge and experience in relevant prehistoric archeological work.

5. All archeological materials, along with field notes, maps, drawings, and photographic records, will be curated in a suitable respository in the State of Tennessee agreed upon by the Tennessee SHPO, the Corps, and Interagency Archeological Services. All such materials will be made available for future research by qualified scholars and students.

6. Copies of the final reports of archeological data recovery will be supplied to the Tennessee SHPO and the Council. In addition, a copy of any final technical report will furnished to Interagency Archeological Services (Heritage Conservation and Recreation Service, Department of the Interior, Washington, D.C. 20243), for possible submission to the National Technical Information Service (NTIS).

7. In accordance with National Register procedures (36 CFR Part 1202, formerly, 36 CFR Part 60), the Corps will ensure that documentation concerning the condition and significance of all listed or eligible sites is forwarded to the Keeper of the National Register within 2 years following the completion of data recovery or alterations so that nominations, boundary changes, or eligibility status will be kept current.

8. Failure to carry out the terms of the Agreement requires that the Corps again request the Council's comments in accordance with 36 CFR Part 800. If the Corps cannot carry out the terms of the Agreement, it shall not take or sanction any action or make any irreversible commitment that would result in an adverse effect with respect to the National Register or eligible properties covered by the Agreement, or would foreclose the Council's consideration of modifications or alternatives to the sale that could avoid or mitigate the adverse effects until the commenting process has been completed.

9. If any of the signatories to this Agreement determine that the terms to the Agreement cannot be met or believes a change is necessary, that signatory shall immediately request the consulting parties to consider an amendment or addendum to the Agreement. Such an amendment or addendum shall be executive in the same manner as the original Agreement.

10. Within 90 days after carrying out the terms of the Agreement, the Corps shall provide a written report to all signatories to the Agreement on the actions taken to fulfill the terms of the Agreement.

Robert Dawey Feb 4, 1981 (date)
Executive Director
Advisory Council on Historic Preservation

24MAR81 (date)
Nashville District
Corps of Engineers

Herbert L. Harper (date) 4/9
Deputy Tennessee State Historic Preservation Off.

(date) 5-1-81
Chairman
Advisory Council on Historic Preservation

Concur:

Bennie C. Keel (date) 4/16
Interagency Archeological Services
Heritage Conservation and Recreation Serv:

DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1070
NASHVILLE, TENNESSEE 37202

IN REPLY REFER TO
ORNED-P

25 AUG 1980

Mr. Robert R. Garvey, Jr.
Executive Director
Advisory Council on Historic Preservation
1522 K Street NW
Washington, DC 20005

Dear Mr. Garvey:

The Nashville District proposes to dispose of approximately 65 acres of Federally-owned land located on Cordell Hull Reservoir, Cumberland River, Jackson County, Tennessee (figures 1 and 2). This disposal will be by sale and will be exclusively for the purpose of public port and industrial use pursuant to Section 108 of the River and Harbor Act of 1969 (Public Law 86-645). This letter is an update of the case report on this action which was filed with your office on 9 August 1978.

An archeological reconnaissance of the tract by the Division of Archaeology, Tennessee Department of Conservation in 1975 and subsequent intensive survey and testing by the Department of Sociology and Anthropology, Middle Tennessee State University in 1976 resulted in the recording of five archeological sites on the tract (figure 3). On 11 April 1979, these five sites were determined eligible for inclusion in the National Register of Historic Places as the Hurricane Branch Archeological District (Inclosure 1).

The Corps has determined that execution of the land sale without appropriate measures to insure the preservation of these sites or undertake data recovery would constitute an adverse effect to the archeological district. Because of the locations of the archeological sites, avoidance does not appear to be a feasible alternative if industrial development is to occur on the tract, nor does the Corps of Engineers have authority within its regulations to fund mitigation of these sites. The sale of this tract has therefore been delayed a number of years, while alternatives for funding the necessary mitigation were being investigated.

Interagency Archeological Services-Atlanta (IAS), Heritage Conservation and Recreation Service, has recently assessed its position and has concluded that

ORNED-P
Mr. Robert R. Garvey

25 AUG 1980

the Department of the Interior is responsible for funding a data recovery program (Inclosure 2). Although Inclosure 2 states that no funds for this work are available in Fiscal Year 1980, IAS has informed me that funds are now available to initiate the program during this fiscal year (Inclosure 3). IAS is preparing a scope-of-services for this work which will be submitted to you as documentation of mitigation plan. The Corps therefore proposes to proceed with the sale of the tract with conditions in the quit-claim deed prohibiting development that would adversely affect the archeological sites until IAS has had an opportunity to complete the data recovery program. The wording of these terms will be as follows:

a. No use of any kind will be made of Area A (figure 4) for a period of one calendar year after date of delivery of the deed to the grantee or until Interagency Archeological Services completes data recovery excavations within Area A, whichever occurs first.

b. No use of any kind will be made of Areas B and C (figure 4) for a period of two calendar years after date of delivery of the deed to the grantee or until Interagency Archeological Services completes data recovery excavations within Areas B and C, whichever comes first.

Because of the economically depressed condition and the need for development and employment opportunities in Jackson County, the Corps and IAS consider the time limitations described above to be reasonable.

IAS has submitted the scope of investigations for data recovery in Area A, site 40JK27 (Inclosure 4). Pursuant to 36CFR800, I am requesting that consultations to execute a memorandum of agreement begin as soon as possible. The Tennessee State Historic Preservation Officer (SHPO) has been consulted and is agreeable with this procedure (Inclosure 5). I would prefer to hold a meeting between our offices, the SHPO, and IAS no later than 5 September 1980 to initiate consultation. An expeditious resolution of this matter is critical so that IAS may obligate funds for the work before the end of Fiscal Year 1980 (30 September 1980).

If you should have any questions, please contact Mr. Danny Olinger of my staff at (615) 251-5831, or FTS 852-5831.

Sincerely,

W. F. Eastland

5 Incl
As stated

E. C. MOORE
FOR Chief, Engineering Division

CF:
Chief, Interagency Archeological
Services-Atlanta

Mr. Herbert L. Harper
Tennessee Historical Commission

United States Department of the Interior
HERITAGE CONSERVATION AND RECREATION SERVICE
SOUTHEAST REGIONAL OFFICE
75 Spring Street S.W., Suite 1176
Atlanta, Georgia 30303

IN REPLY REFER TO:

W540
1201-02(a)

Colonel Lee Tucker
District Engineer
Department of the Army
Nashville District, Corps of Engineers
Post Office Box 1070
Nashville, Tennessee 37202
Attention: Mr. Danny Olinger

1 Aug

Dear Colonel Tucker:

Enclosed is the scope of work for archeological data recovery at Site 40 JK 27 in the Gainesboro Port Authority tract on Cordell Hull Reservoir near Gainesboro, Tennessee. The scope has been distributed to 17 firms and institutions expressing interest in the project.. Proposals are due in this office postmarked not later than 22 August 1980. We anticipate award of contract on or about 18 September 1980.

The scope of work calls for excavation at Site 40 JK 27. Additional funding will be required for analysis and reporting of the material and data recovered and for the investigation of the other sites in the proposed port project area. We will request this additional funding for FY 81. However, our Washington Office feels that there is little hope of obtaining the money in the next fiscal year. Should this be the case, we will attempt to obtain funding for FY 82.

Should you have any questions, please contact Mr. Wilfred Husted at FTS 242-2632.

Sincerely,

V A Carbone

Victor A. Carbone
Acting Chief, Interagency
Archeological Services-Atlanta

Enclosure

Inclosure 4

APPENDIX B

Scope of Services

United States Department of the Interior
HERITAGE CONSERVATION AND RECREATION SERVICE
SOUTHEAST REGIONAL OFFICE
75 Spring Street S.W., Suite 1176
Atlanta, Georgia 30303

IN REPLY REFER TO:
W540
500-03

JUL 15 1980

Dear Colleague:

Enclosed is the scope of work for Archeological Data Recovery at 40JK27, Hurricane Branch Archeological District, Jackson County, Tennessee. Proposals must be received in this office postmarked not later than August 22, 1980.

We look forward to receiving your proposal.

Sincerely,

VA Carbone

Victor A. Carbone
Acting Chief, Interagency
Archeological Services-Atlanta

Enclosure

United States Department of the Interior
HERITAGE CONSERVATION AND RECREATION SERVICE
SOUTHEAST REGIONAL OFFICE
75 Spring Street S.W., Suite 1176
Atlanta, Georgia 30303

IN REPLY REFER TO:
W540
500-03

JUN 30 1980

Commerce Business Daily
U. S. Department of Commerce
433 West Van Buren Street, Room 1304
Chicago, Illinois 60607

No. IAS/A-80-18

Acting Chief, Interagency Archeological Services-Atlanta, Heritage Conservation and Recreation Service, Richard B. Russell Federal Building, 75 Spring Street S.W., Room 1140, Atlanta, Georgia 30303, telephone (404) 221-5180.

H - ARCHEOLOGICAL DATA RECOVERY at the Gainesboro Port Authority Tract, Tennessee. Services to be performed consist of the archeological excavation of Site 40 JK 27 on the left bank of Cordell Hull Reservoir, Cumberland River, near Gainesboro in Jackson County, Tennessee. The research findings will be prepared for submission to the Heritage Conservation and Recreation Service, Department of the Interior, in a form suitable for publication. This is not a request for proposal. Proposals are to be prepared on the basis of the scope of work that will be provided to qualified firms, individuals, and institutions submitting written expressions of interest. Only those firms, individuals, and institutions responding to this announcement with a letter of interest and documentation of personnel and organization qualifications to conduct the work by close of business 14 July 1980 will be considered. Award of contract is expected on or about 18 September 1980. This procurement is a total labor surplus area set-aside.

Victor A. Carbone
Acting Chief, Interagency
Archeological Services-Atlanta

REQUEST FOR PROPOSALS

ARCHEOLOGICAL DATA RECOVERY AT 40JK27
HURRICANE BRANCH ARCHEOLOGICAL DISTRICT
JACKSON COUNTY, TENNESSEE

In compliance with Public Law 95-507, This Procurement
is a total labor surplus area set-aside

1. Introduction

Interagency Archeological Services-Atlanta is soliciting proposals for data recovery excavations at Site 40JK27, a portion of the Hurricane Branch Archeological District, Jackson County, Tennessee. These investigations will be conducted with funds appropriated to the Secretary of the Interior under the authorities of the Archeological and Historic Preservation Act of 1974 (Public Law 93-291) and will be implemented by means of a cost-reimbursable contract. The cost of the field phase of this project is estimated to be between $43,000 and $50,000. Proposals in excess of this amount may not be considered. The offerers are directed to the notice that this procurement is a total labor surplus area set aside. (Exhibit 1). Offerers must complete the Small and Disadvantaged Business Certification and return with their Proposal (Exhibit 2). No proposals will be considered without this certification and no contract award will be made without it being executed.

Funding is currently available only for the fieldwork phase of this project. Supplemental funding for the laboratory and report preparation phases may be available through reprogramming of other monies. Should the additional funds be obtained, the contract for the fieldwork phase will be modified to support completion of the project. Every effort will be made to maintain continuity between the field and laboratory phases of the project. However, if supplemental funding cannot be obtained through reprogramming, the funds will be requested for Fiscal Year 1981 (FY81), beginning October 1, 1980. If the necessary monies are appropriated for FY81, it is very likely that actual allotment of the funds will not occur until one or more months after the start of the fiscal year. It is also possible that the funds might not be appropriated. In either case, the contractor will be expected to maintain all materials and data accumulated during the fieldwork until funding is available for analysis and report preparation.

2. Project Description and Construction Schedule

Site 40JK27 is a portion of a 65 acre tract of land being sold to the Gainesboro Port Authority by the Corps of Engineers for the purpose of port and industrial development. The tract of land is located on the left bank of the Cumberland River (Cordell Hull Reservoir) between River Miles 358.6 and 359.5 (Fig. 1). It is immediately upstream from the City of Gainesboro, and the confluence of the Roaring River with the Cumberland. Sale of the property for development of the port and industrial facilities requires mitigation of adverse effects on five sites which comprise the Hurricane Creek Archeological District. Data recovery at 40JK27 is the initial mitiga-

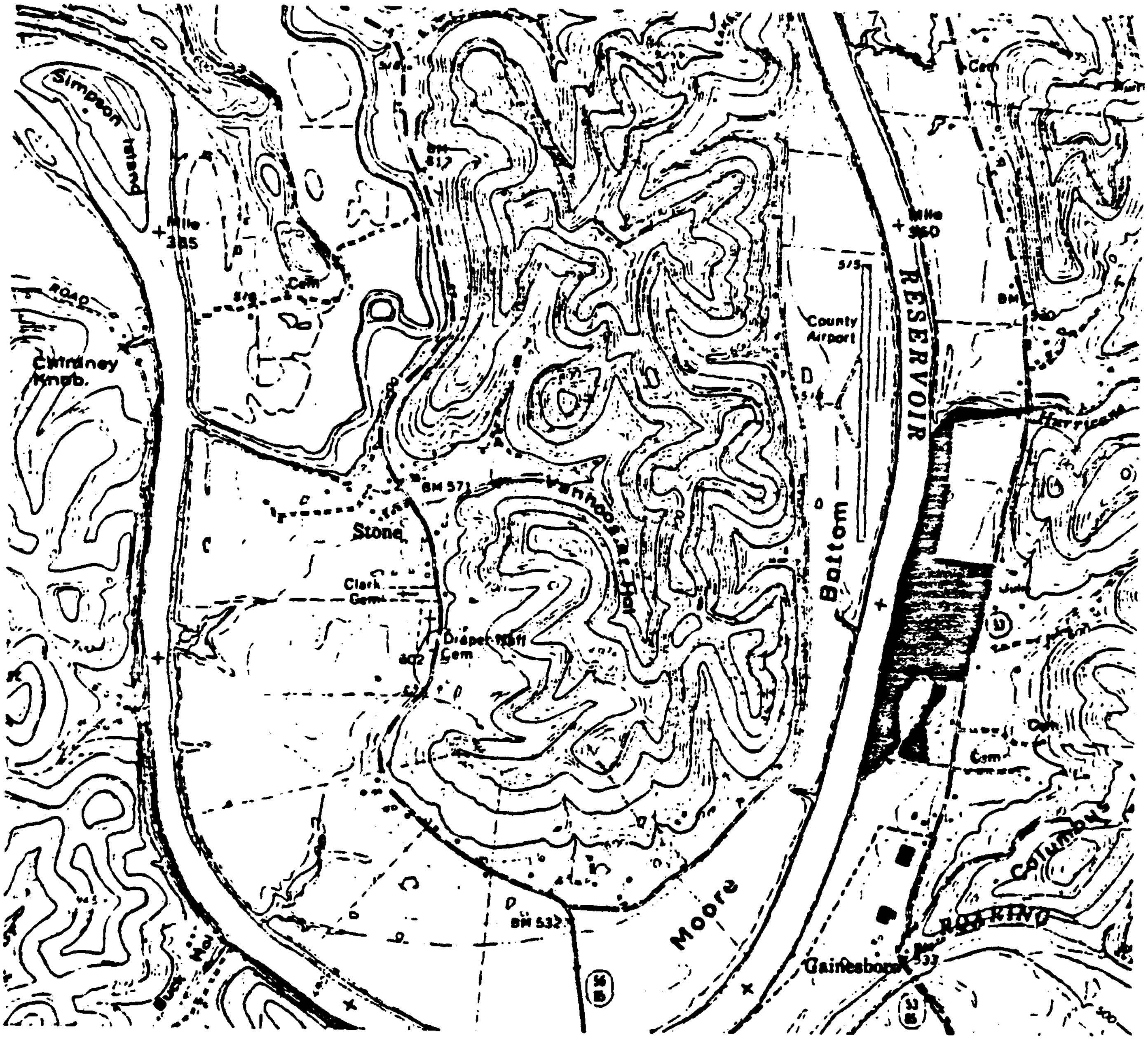

Figure 1. General Location of Gainesboro Port Authority Tract, Jackson County, Tennessee. Taken from Whitleyville, Tennessee 7.5' Quadrangle.

tive action taken within the district. The investigations are being scheduled as funds become available to allow development of some areas of the facility once the cultural resources are investigated.

3. Site Accessibility

The project area is most easily reached via the City of Gainesboro, Tennessee. The project area is located north of Gainesboro on Highway 53 approximately .5 mile outside the city limits.

4. Archeological Background

The 46-acre (18.63 hectare), Hurricane Branch Archeological District (located within the roughly 65-acre proposed Gainesboro Port Authority Tract) is bounded on the west by the Cordell Hull Reservoir (Cumberland River) and extends approximately 590 feet (c. 180 meters) inland (east) from the shoreline. The District parallels the river from River Mile 359.6 to River Mile 359.5. It is located within the left descending bank floodplain system (Figure 2).

Located within the Highland Rim physiographic province, the channel of the Cumberland River and its contiguous floodplain, in the study area, are paralleled by rather steep uplands characteristic of the region. The eastern floodplain of the Cumberland River in the immediate vicinity of the Hurricane Branch Archeological District is a narrow strip of land approximately 1,400 feet (c. 462 meters) in width. Elevations range from 500 feet along the riverbank to slightly more than 525 feet at the northern end of the District. Adjoining the floodplain to the east is a steep ridge that attains elevations in excess of 900 feet.

Topographic features within the District include a natural levee extending the length of the District north to south, which separates the steep Cumberland River bank on the west boundary from a gentle slope into a natural interior drainage outside the east boundary. The southeastern extremity of the District has been disturbed by a small artificial embayment created when the Cordell Hull Reservoir was impounded. This small embayment is fed and drained by an unnamed intermittent stream which forms the southern boundary of the District. Hurricane Branch, draining into the Cumberland River to the west, forms the northern boundary of the District.

Prior to construction of the Cordell Hull Reservoir in 1972, roughly 70% to 80% of the 46 acres of subject property was under cultivation. Presently, the area is characterized by secondary growth of briars, broom sedge, ragwee, domesticated and nondomesticated grasses. In a narrow band along the natural flood levee at the extreme western margin of the District, mature silva species are the dominant flora, particularly oak, maple, redbud, dogwood, and hickory. Georgia cane occurs, as well as recently planted mixed deciduous and coniferous species (Fox 1977).

Historically, the Hurricane Branch Archeological District has been utilized for agricultural purposes; however, since the construction of Cordell Hull

Reservoir in 1972, these activities have ceased and the area has become overgrown with scrub vegetation. No evidence or historical records exist of any large scale disturbance with the District (except for the small artificial embayment in the southern portion of the District). It is possible, however, that historic structures associated with agricultural endeavors were occasionally constructed within the District (Fox 1977). Five barbed wire fence lines, demarcating either property lines or livestock pastures and cultivated fields, extend east to west through the District, perpendicular to the Cumberland River. Adjacent developments occur as house trailers, permanent residences, and small factory buildings to the south and east of Hurricane Branch Archeological District. The District seems to be free of ground-disturbing vandalism. Surface relic collection has probably taken place in the agricultural past.

In 1975, the Tennessee Division of Archaeology performed an archeological reconnaissance of the proposed 65-acre Gainesboro Port Authority Tract on Corps of Engineers Cordell Hull Reservoir project lands (Butler 1975). The Division study reported five prehistoric archeological loci. located by vegetation-limited surface search and the excavation of a large number of test holes.

"These tests were made at frequent intervals along the crests of alluvial ridges and other areas where archeological remains might feasibly be encountered." (Butler 1975)

Based on recommendations provided in the Division's report, another study was funded. In 1977, Middle Tennessee State University (MTSU) performed survey and testing on the five loci (Fox 1977). This study located a sixth prehistoric locus outside of the Port Authority (Federal) boundaries. Each site within the Port Authority boundaries was sampled by at least three test excavation units during the 1977 study. Based on the results of this testing, two sites, 40Jk27 and 40Jk30, were determined, by the investigator, to be significant and National Register eligibility was recommended. Concurrence was received from the Tennessee State Historic Preservation Officer on 11 July 1977. The Corps of Engineers (Nashville District) submitted documentation to the National Register and a determination of eligibility was received in November 1977. At this time the Keeper of the Register recommended that an archeological district be established to include all five sites (40Jk27, 28, 29, 30, and 31) because "...there is a significant void in our knowledge of the prehistory of the Cumberland River system..." (Fox 1977), and that "While they (the five loci) may not be individually eligible, they may contribute important information on the full range of activities within the context of a district." (Murtaugh 1977)

Five prehistoric sites are located in the Hurricane Branch Archeological District (Map 1). These are:

1. 40Jk27. Located near the center of the District, this site is the only known multi-component site within the District. This Woodland Period site occupies a natural levee and is slightly higher in elevation than are adjacent areas of the floodplain. Areally, the site measures approximately 1,000 feet north to south by 240 feet east to west (c. 300

by 75 meters). Vertically, the site is composed of at least three undisturbed culture-bearing strata. Earlier horizons may exist, however, high water table levels prevented Fox from ascertaining this. Backhoe trenching, test units, and dry screening of all constituent soil matrices (including plowzone strata) resulted in the recovery of some 1,200 artifacts. Several Woodland-type projectile points were recovered as well as sherds of limestone, crushed quartzite, quartz sand, and grog temper (or combinations thereof) pottery (Amick 1978, unpublished). The quantity of artifactual materials collected suggests that site residents engaged in, if not long-term, at least intense, seasonal occupational interaction with the various local microenvironments (Fox 1977).

2. 40Jk28. Located at the northern edge of the artificial embayment in the southern portion of the District, this shallow probable Archaic site measures approximately 150 feet north to south by 120 feet east to west (c. 45 by 36 meters). At present, the site is overgrown with briars and dense grasses. Four test excavation units were examined for stratified cultural deposits. Few items were recovered from below the plowzone. Three hundred eighty-two artifacts were recovered of which 97.4% are lithic debitage, the remainder either highly fragmentary or undiagnostic (Fox 1977).

3. 40Jk29. Located on the crest and backslope of the natural levee in the southern end of the District, this small plowzone site of unknown cultural affiliations, has an areal extent of 150 feet north to south by 50 feet east to west (c. 45 by 15 meters). Collections made during Butler's (1975) reconnaissance and Fox's (1977) survey and testing consisted of only undiagnostic materials. A series of three test units were investigated. These units were located in distinct sectors of the site in order to acquire a more representative inventory of cultural material present; 98.5% of collected materials was debitage, the rest fragmentary and undiagnostic. The site appears to have been an area of limited cultural activity. Periodic erosion has occurred here (Fox 1977).

4. 40Jk30. Situated on the crest of the natural levee roughly 200 feet (60 meters) west-southwest of 40Jk28 and 400 feet (120 meters) north of 40Jk29, this Mississippian habitation site measures approximately 300 feet north to south by 70 feet east to west (c. 91 by 21 meters). Presently the site has suffered very little from historic agricultural practices. Available evidence indicates that this locus contains intact culture-bearing deposits and a potential residential structure. Ground cover consists of grasses and scrub vegetation. Following establishment of a grid system, six test units were located within the site area established in the 1975 reconnaissance. This sampling method was designed to take advantage of extant knowledge of the site, therefore enabling the investigator to more efficiently examine the vertical stratigraphy with a minimum number of excavation cuts. Charred wood remains of a possible structure and associated cultural materialswere encountered and left in situ in the course of testing. Although only 466 cultural items were recovered, 46.9% have potential diagnostic value, i.e., one Madison-type projectile point, 184 sherds of shell-tempered plain and decorated pottery, and 34 sherds of plain and decorated limestone-tempered pottery (Fox 1977).

5. 40Jk31. Situated on and around a prominent rise which overlooks the mouth of Hurricane Branch as it enters the Cumberland River, this Terminal Archaic-Early Woodland Transition plowzone site measures approximately 165 feet north to south by 82 feet east to west (c. 50 by 25 meters). The site has been heavily disturbed by modern agricultural activities. Collections from the site are small, diagnostic materials scant. A portion of the site extends outside the Federal boundaries east into a cultivated field and is characterized by a dense lithic scatter. Four test units were opened on this site. One thousand, six hundred thirty-eight artifacts were recovered. Only 1.7% are diagnostic, the rest debitage. Projectile points (Gary-like, Big Sandy auriculate, and Motley) and one fragment of polished stone (possibly greenstone) were recovered in the 1977 survey and testing program (Fox 1977).

The Butler and Fox reports are included as Exhibits 3 and 4 to provide more specific information on 40JK27 and the general area. After Fox's testing program, Mr. Danny Olinger, Nashville District, Corps of Engineers, conducted additional backhoe trenching at the site. These data are included as Exhibit 5.

5. Description of Services to be Performed at 40JK27

Due to the current state of knowledge concerning this large, stratified, multi-component site, the data recovery program at 40JK27 should consist of two sequential phases. The contractor will initially be required to conduct an intensive testing program that will:

1. establish adequate control over the horizontal and vertical aspects of the cultural deposits at the site,

2. determine the nature of the natural stratigraphy at the site, vert exc.

3. establish the "relationship" between the natural stratigraphy and the vertical and horizontal extents of the culture-historical components at the site, and

4. select areal samples from each component for excavation to gather data to address specific research questions. v. & h. exc.

This initial portion of the data recovery program is expected to involve both hand and mechanically excavated units. Brush clearing, plowing, and/or discing may also be necessary. A meeting between the contractor and representatives of the Interagency Archeological Services-Atlanta will be held at the end of the intensive testing phase in order to evaluate the data acquired and to formulate a structure of the continued data recovery.

The second phase of the data recovery program will consist of expanded investigations of the components delineated during the earlier phase. This portion of the program must be structured not only to sample each component of the site, but the functional variability within the component as well.

The focus of these investigations must be closely tied to the pertinent research questions outlined in the project research design. The additional use of machinery is anticipated during the second phase of the data recovery program to expose and isolate specific components of the site for excavation.

The contractor must staff a field laboratory which will provide the Principle Investigator and the Field Director with adequate information to efficiently conduct the excavations.

It is probable that pertinent research questions may change during the excavation of the site due either to specific types of data expected not being present or types of data not anticipated, being located. Provisions must be made by the contractor for operationalizing these changes and discussing them with Interagency Archeological Services-Atlanta.

6. Research Design

The investigation will be conducted within the framework of a professionally adequate research design reflecting the proposed guidelines set forth in 36 CFR 66 (Exhibit 6). The prospective contractor, in the process of formulating his research design response to this scope of work, shall devise methods of research that will allow articulation of the research problems with the expected data recovery. These methods and related research techniques shall detail the step-by-step manner in which the investigation is to proceed both in the field and in the laboratory.

Proposals should be organized to address at minimum the following goals:

a. Development of a culture history for the site.

b. Reconstruction of subsistence system(s).

c. Activity patterning and site function.

Proposals should not be limited to consideration of the problems enumerated above. Other research problems of local and regional scope might be clarified by excavation of 40JK27. Innovative approaches are encouraged. Research considerations included in proposals will play an important part in the selection process.

The comprehensive program of work including formulation of research problems, the design of excavations to yield data relevant to the selected problems, and the analytical process should be addressed in detail in the proposal.

Technical proposals will be evaluated independently of budgets. Therefore, the technical proposal also should contain a schedule of work diagramming the duration of each field and laboratory operation.

The project should be conducted in accordance with a professionally adequate research design reflecting:

a. An understanding by the principal investigator of the data or research value of the site.

b. An acquaintance on the part of the principal investigator with previous relevant research, including research in the vicinity of the proposed undertaking and research on topics germane to the data recovery program regardless of where such research has been conducted.

c. The development of a definite set of research problems, taking into account the defined research value of the site, other relevant research and general theory in the social and natural sciences and the humanities that may be pertinent to the data to be recovered.

d. A responsiveness to the need to recover from the site a useable sample of data on all research problems that reflect the site's research value or a clear and defensible rationale for collecting data on a smaller range of problems at the expense of others.

e. Competence on the part of the principal investigator and the field director in the methods and techniques necessary to recover the data contained in the site, and an intention to utilize these methods and techniques in the research. It is expected that specialists in related fields, such as geology, botany and zoology, will serve as consultants.

The data recovery program should adhere to the following guidelines:

a. The program should provide for adequate personnel, facilities, and equipment to fully implement the research design.

b. The program should provide for adequate consultation with scholars whose research interests would enable them to contribute to the research.

c. The program should employ methods that insure full, clear and accurate descriptions of all field operations and observations, including excavation and recording techniques, stratigraphic and/or associational relationships where appropriate, significant environmental relationships, etc.

d. Award of the contract may be made without negotiation of the proposals received. Therefore, the proposals should be technically adequate when initially submitted.

7. Contractor Obligations for Project Implementation

a. Where rights-of-entry have not been obtained by the Government the contractor will be required to obtain from landowners the necessary rights-of-entry for making any investigations required under this contract.

The contractor will be advised as to arrangements previously made with landowners, if any. The contractor will assume all responsibility for and take all precautions to prevent damage to property entered.

b. When cultural resources studies are possibly related to a specific group of people whose descendants are still living in the general area, they should be informed of the studies and consulted, especially where interpretive developments are being considered.

c. Human skeletal remains gathered by this program will not be placed on public display. Any human osteological material recovered by the contractor will be treated in accordance with the attached Policy on Disposition of Human Remains (Exhibit 7).

d. The cultural resources study will be conducted in accordance with the appropriate Federal agency rules or guidelines (provided by the Government) and Proposed Recovery of Scientific, Historic and Archeological Data: Methods, Standards and Report Requirements (36 CFR 66) (Exhibit 6).

8. Evaluation Criteria

Proposals will be evaluated by Interagency Archeological Services-Atlanta staff members according to the following criteria and weight values:

a. Comprehension of research problem(s) and attendant method(s) with statement of elaboration (50 percent)

(1) Is the offeror familiar with the area and its prehistory?

(2) Is the offeror familiar with the potential data sources?

(3) Does the offeror indicate a thorough understanding of research problems that might be addressed by investigation of the site?

(4) Are the research problems integrated with an appropriate research design?

(5) Is the explanation of the research design adequate?

(6) Are appropriate field methods and procedures proposed in detail.

(7) Are appropriate laboratory procedures and analyses proposed in detail?

(8) Do the proposed research design, methods, and analyses fulfill the stated project objectives?

b. Personnel (vitae are required for principal project personnel, supervisory personnel, and consultants. Each key person's experience and education will be evaluated for depth, quality, and pertinence to the tasks assigned) (15 percent)

(1) Are personnel experienced in the area and its prehistory?

(2) Education and experience in the general archeological field.

(3) Are consultants available for specialized work, if proposed?

c. Organization (individual, institutional or corporate past record and capability to conduct the research) (15 percent)

(1) Have past projects been accomplished and completed on schedule?

(2) In past projects, has the offeror been responsive to contract requirements?

(3) Have reports been adequate?

(4) Are facilities and resources adequate to conduct the project?

d. Feasibility of project scheduling (10 percent)

(1) Is project scheduling realistic?

(2) Is the duration of each field and laboratory operation provided for the project?

(3) Is the division of personnel time realistic?

e. Budget (offerors should provide a detailed rationale for all cost estimates in their proposed budgets) (10 Percent)

(1) Is the budget sufficiently detailed?

(2) Are salary rates, mileage, rental costs, etc. clearly identified?

(3) Is the budget reasonable and realistic in amounts designated for specific items and categories?

When deemed appropriate by Interagency Archeological Services-Atlanta, neutral outside (non-Federal agency) professional archeologists may be utilized as review consultants. However, in all cases, the final decision as to the successful offeror will be made by the Contracting Officer.

9. Documentation

The contractor will be required to submit detailed monthly progress reports, including photographs where appropriate, to Interagency Archeological Services-Atlanta. These reports shall contain an accurate up-to-date account of all fieldwork and laboratory procedures and results. Reports will be sufficiently detailed to permit monitoring of actual progress. Monthly reports shall be submitted to the Contracting Officer's Authorized Representative by the seventh day of each month during the period that the contract is in force.

The contractor will be required to submit at least two (2) but not more than four (4) 8" x 10" glossy photographs of selected aspects of the investigations.

Each photograph should clearly illustrate an aspect of the project of interest to the general public, Federal agency representatives, and other non-professional audiences. Each photograph must be accompanied by a short, concise, informative caption. Selected photographs may be used to illustrate the Secretary of Interior's annual report to the Interior and Insular Affairs committees of the United States Congress. They also may be used to illustrate publications of other Federal agencies.

A topographic map will clearly indicate the locations of all excavation units and cardinal directions. A daily site log will be kept which will include a summary of the work accomplished and general observations. Profiles and drawings/photographs are to be made. All photographs will contain an appropriate scale and direction arrow located clearly in the frame, but not conspicuous to the extent that they detract from clear rendering of the subject. All soil horizons and strata will have written descriptions using standard scientific terms. Color descriptions will be made in Munsell terminology. All features will be recorded including basic dimensions, orientation depth.

10. Contract Requirements

a. Report format and content. Final drafts of reports of investigations shall reflect and report the analysis outlined in the scope of work. They shall be suitable for publication and be prepared in a format reflecting contemporary organizational and illustrative standards of the current professional archeological, architectural and historical journals. The report must be typed, single spaced, on standard size (8½" x 11") white paper. All pages must be numbered. Photographs, plans, maps, drawings, and text must be clean and clear.

The report, through the Contracting Officer, will be maintained on microfiche by the National Technical Information Service (NTIS) and will be available to interested persons from NTIS. Each report is to include Optional Form 272 (provided the Contractor by the Contractor Officer) as its first page. Blocks 4, 5, 7, 8, 9, 11, 12, 13, 15, 16, 17b, and 21 of Optional Form 272 will be completed by the Contractor.

If the contractor expects to publish all or part of the final report, he must provide the Contracting Officer with a letter specifying the expected date, place and name of publication. This letter must be submitted with the final report. In addition, all reports must contain the following:

(1) If a report has been authored by someone other than the contract principal investigator, the cover and title page of the publishable report must bear the inscription Prepared Under the Supervision of (Name), Principal Investigator. The Principal Investigator is required to sign the original copy of the report.

(2) If a report has been authored by someone other than the contract principal investigator, the principal investigator must at least prepare a foreword describing the overall research context of the report,

the significance of the work and any other related background circumstances relating to the manner in which the work was undertaken.

(3) The title page of the report must bear an appropriate inscription indicating the source of funds used to conduct the reported work.

(4) An abstract suitable for publication in an abstract journal must be prepared. This should consist of a brief, quotable summary useful for informing the technically oriented professional public of what the author considers to be the contributions of the investigation to knowledge.

(5) In addition, a second abstract must be prepared consisting of a brief summary useful for informing the non-professional public of what the author considers to be the contributions of the investigation to knowledge.

b. Timetable for work completion. Distribution of the Request for Proposal will be made on or about 18 July 1980. Completed proposals are to be received by the Interagency Archeological Services-Atlanta office postmarked not later than 22 August 1980. Selection of the most appropriate proposal from those submitted will be made so as to award the contract on or about 18 September 1980. The start of fieldwork will be contingent on the signing of a Memorandum of Agreement between the Nashville District, Corps of Engineers and the Advisory Council on Historic Preservation. The contractor will be expected to begin the project as soon as possible after notice to proceed. Three copies of a draft report, detailing the research results will be prepared for submission on a date decided through negotiation. The reviewed draft will be returned to the contractor for any requested changes within 45 days. Three copies of any revised version requested by Interagency Archeological Services-Atlanta shall be submitted within 30 days of receipt of the requested changes. Subsequent changes and submission of revised drafts may be requested by Interagency Archeological Services-Atlanta. The final report must be submitted in a minimum of twenty-five (25) copies.

c. Payments

The contract will be cost reimbursable. Partial payments may be made up to seventy-five percent (75%) of the total amount allotted, based on percentage of completion of the investigation as reflected in progress reports and confirmed by project monitoring by the Government. All or any part of any partial payment requested may be withheld if monthly progress reports are not submitted as required. All requests for payment must be accompanied by a detailed invoice with supporting accounting documentation. At least one original and three copies must be received by this office. The project name, contract number, project location, and the name of the contracting institution or firm must be prominently placed on the invoice. The final invoice must be marked "final." The release of claims (supplied by Interagency Archeological Services-Atlanta) form must accompany the final invoice.

The items in the invoice should appear in the same order as they appear in the contract budget (i.e. if the budget divides travel into car rental, mileage, and per diem, the invoice should be organized using these categories). The invoice should include all billings for a set calendar period (i.e. two weeks, one month). The supporting documentation shall consist of:

(1) Personnel - time sheets.

(2) Equipment purchased or rented - (receipts for gasoline, lodging, rental cars, machinery rentals and expendable supplies like bags, boxes, string, pens, pencils, paper, etc.)

(a) Copies of receipts will be sent in order to document the invoice billing.

(b) Each receipt will be labeled with the budget category.

(c) Odometer readings will be reported when the rate per mile is being charged. Gasoline receipts are not necessary in this case.

(d) Phone calls pertinent to the project will be accepted. Phone calls not from the field to the home office and visa versa must be documented.

Twenty-five percent (25%) of the contract amount will be withheld until receipt and acceptance of the final report.

d. Personnel Standards. Agencies, institutions, corporations, associations, or individuals will be considered qualified when they meet the minimum criteria given below. As part of the supplemental documentation, a contract proposal must include vitae for the principal investigator, main supervisory personnel and consultants in support of their academic and experiential qualifications for the research. In the event that support personnel have not been identified at the time of contract proposal, vitae on supervisory positions may be omitted until such time as they are identified with the provision that those to be selected meet the minimum professional standards stated below and that their retention is subject to approval by the Contracting Officer's Authorized Representative.

(1) Archeological Project Directors or Principal Investigators (PI) Persons in charge of an archeological project or research investigation contract, in addition to meeting the appropriate standards for archeologist, must have the doctorate or an equivalent level of professional experience as evidenced by a publication record that demonstrates experience in field project formulation, execution and technical monograph reporting. Suitable professional references may also be made available to obtain estimates regarding the adequacy of prior work. If prior projects were of a sort not ordinarily resulting in a publishable report, a narrative should be included detailing the proposed project director's previous

experience along with references suitable to obtain opinions regarding the adequacy of this earlier work.

(2) Archeologist. The minimum formal qualifications for individuals practicing archeology as a profession are a B.A. or B. Sc. degree from an accredited college or university, followed by 2 years of graduate study with concentration in anthropology and specialization in archeology during one of these programs, and at least two summer field schools or their equivalent under the supervision of archeologists of recognized competence; a Master's thesis or its equivalent in research and publication is highly recommended, as is the Ph.D degree. Individuals lacking such formal qualifications may present evidence of a publication record and references from archeologists who do meet these qualifications.

e. Standards for Consultants. Personnel hired or subcontracted for their special knowledge and expertise must carry academic and experiential qualifications in their own fields of competence. Such qualifications are to be documented by means of vitae attachments to the proposal or at a later time if the consultant has not been retained at the time of proposal.

f. Institutional or Corporation Qualification. Any institution, organization, etc. obtaining this contract, and sponsoring the principal investigator or project director meeting the previously given requirements, must also provide, or demonstrate access to the following capabilities:

(1) Adequate field and laboratory equipment necessary to conduct whatever operations are defined in the Scope of Work. However, this qualification may be waived under circumstances of extreme need through negotiation.

(2) Adequate facilities necessary for proper treatment, analysis, and storage of specimens and records likely to be obtained from a given project. This does not necessarily include such specialized facilities as pollen, geochemical, or radiological laboratories, but does include facilities sufficient to properly preserve or stabilize specimens for any subsequent specialized analysis.

g. Disposition of Data. When the recovered data has been removed from non-federally owned lands such as state, county, municipal, or private citizen, then negotiated arrangements must be made for permanent curation. Such arrangements will be negotiated between the Departmental Consulting Archeologist, State Historic Preservation Officer, State Archeologist (when appropriate), and the property owner in accordance with Heritage Conservation and Recreation Service policy. If the archeological specimens and records are excavated in one state by a contractor whose base of operations is located in another state, it is the policy of the Service to provide appropriate state officials a one year time period in which to mutually agree in writing with the Departmental Consulting Archeologist upon the return of all collections, specimens, and duplicates of attendant data, or any part thereof, to the state from which the data and collections were derived. Any cost incurred as a result of the transfer of these data and collections will be the responsibility of the state requesting them. The principle governing these negotiations is to be that where public funds are expended for the recovery of such data, the public must be the benefactor. The organization accepting the specimens and data for permanent curation must agree to accept the attached Curation Standards (Exhibit 8).

h. General Provisions. Attached to this scope of work are provisions dealing with: (1) equal opportunity hiring, (2) minimum wage requirements, (3) health conditions for employees, (4) overhead limitations and excessive charge levels, (5) hiring of the handicapped, (6) use of convict labor, (7) on-site federal agency inspection, and (8) Viet Nam veterans' preference, (Exhibit 9). The contractor will conduct the project in compliance with these provisions.

11. Budget and Schedule of Work

600 pg report

20 days of [illegible]

Two budgets must be submitted, one providing for the field portion of the project including return of personnel, equipment, and recovered materials to the base of operations, and one for the laboratory and report preparation phase.

The estimated budgets should be separated into the different research tasks involved (like field and laboratory work). The amount of time to be devoted to each research task should be clearly indicated. Salaries for each employee category should be listed showing the pay rate, the number of people in the category and the duration of their employment. The tasks of each employee category should be outlined in the justification discussed below. Salary levels may not exceed the current base salary pay rate for that individual when he is not employed on the research project. Fringe benefits and overhead charges should be clearly identified. Other expenditures like expendable supplies, and photographic materials should be tied directly to dollar amounts. Rental charges, computer costs and mileage estimates should state the time period involved and the base rate for each item. When per diem is requested, the costs per person per day should be reflected. The individuals to whom the per diem will be paid should be clearly identified.

Since the budgets will be evaluated independently of the technical proposal, an attachment will be prepared which justifies the proposed expenditures in the light of the research tasks to be performed.

Considerable care should be exercised in this justification to allow an opportunity to assess the reasonableness of the proposed charges. This endeavor will include a schedule of work diagramming the duration of each field and laboratory operation outlined in the research methods section of the proposal.

The budgets will be placed in an inner sealed envelope separate from the technical proposal and designated "Budgets" on the lower left hand corner. The outer envelope will bear this label in the lower left hand corner: "Data Recovery at 40JK27, Tennessee."

12. Endorsements

Proposals submitted for consideration must bear the endorsement, by means of signatures, of the proposed Principal Investigator and of an official authorized to bind the offeror.

13. Proposals are to be submitted to:

Interagency Archeological Services-Atlanta
Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

Questions concerning this scope of work may be addressed to Mr. Wilfred Husted at the above address or by telephone at (404) 221-2632.

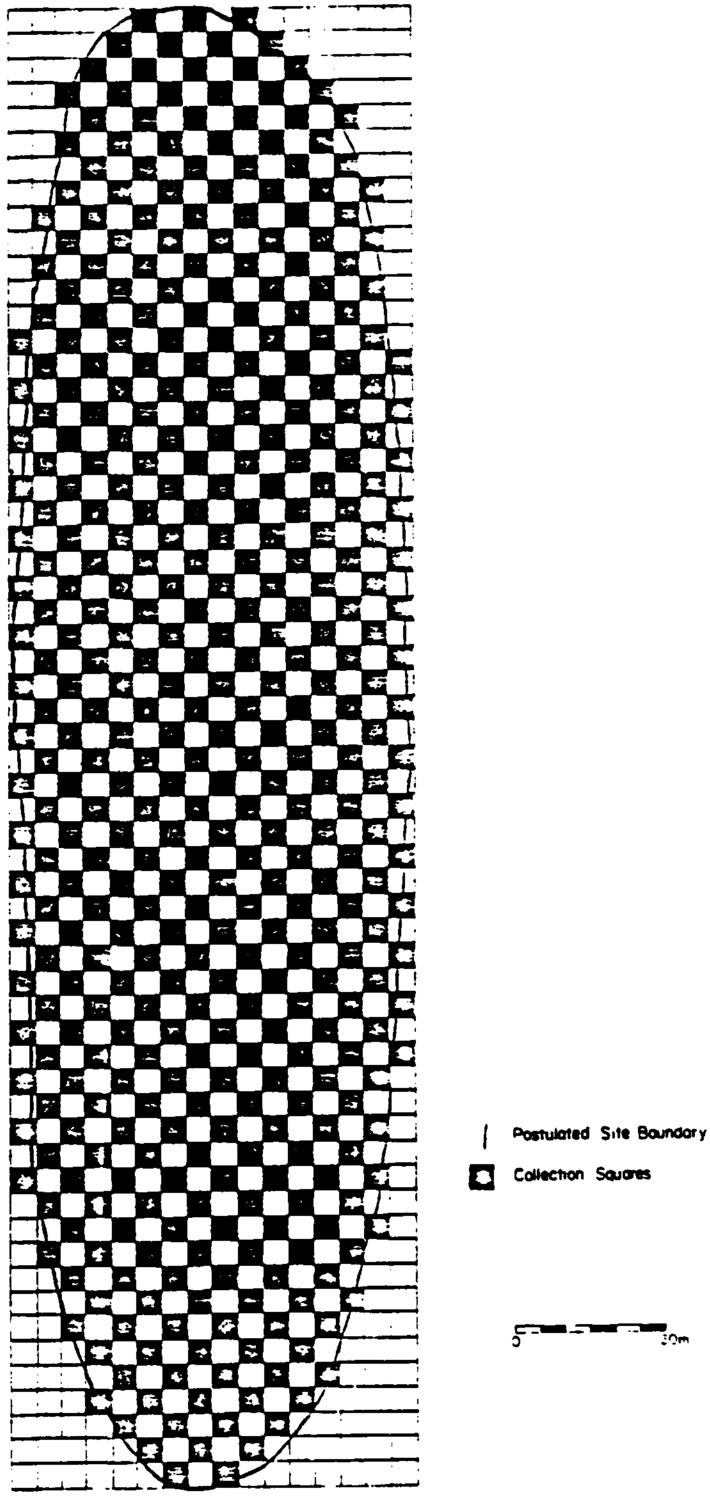

Figure A-1. Checkerboard Sampling Strategy for Controlled Surface Collection at Site 40JK27.

EXHIBIT 1

NOTICE OF TOTAL LABOR SURPLUS AREA SET-ASIDE

(a) General. Bids or proposals under this procurement are solicited from concerns that will agree to perform as labor surplus area concerns. This action is based on the provisions of the Small Business Act (15 U.S.C. 644(e)) and Defense Manpower Policy 4A. Bids or proposals received from concerns which do not agree to perform as labor surplus area concerns will be considered nonresponsive.

(b) Definitions. (1) The term "labor surplus area" means a geographical area identified by the Department of Labor as an area of concentrated unemployment or underemployment or an area of labor surplus.

(2) The term "concern located in a labor surplus area" means a labor surplus area concern.

(3) The term "labor surplus area concern" means a concern that together with its first-tier subcontractors will perform substantially in labor surplus areas.

(4) The term "perform substantially in labor surplus areas" means that the costs incurred on account of manufacturing, production, or appropriate services in labor surplus areas exceed 50 percent of the contract price.

(c) Agreement. The bidder or offeror agrees that, if awarded a contract as a labor surplus area concern, he will:

(1) Perform the contract, or cause it to be performed, substantially in areas classified as labor surplus areas on the date of the solicitation. However, if an area selected by the bidder or offeror is no longer classified as a labor surplus area at the time of performance, he is encouraged to select another area for performance which is classified at that time as a labor surplus area.

(2) Submit a report to the Contracting Officer 30 days after the award of the contract (if it exceeds $10,000), or such longer time as prescribed by the contracting officer, which contains the following information.

REPORT ON PERFORMANCE IN LABOR SURPLUS AREAS

(a) Amount of the contract..............$.........

Performance in Labor Surplus Areas

(b) By the prime contractor:

(1) Identity of labor surplus area)..$.........[1]
(2) ...do..........................$.........
(3) ...do..........................$.........
(4) ...do..........................$.........

(c) By the subcontractors (first-tier):

(1) (Identity of labor surplus area).$........[1]
(2) ...do...........................$........
(3) ...do...........................$........
(4) ...do...........................$........

(d) Total of (b) and (c).................$........

[1]Costs incurred by the Contractor or his first-tier subcontractors on account of production, manufacturing, or appropriate services performed in the labor surplus area.

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APPENDIX C

Project Budget

Proposed Budget for the Mitigation
of Site 40JK27, Jackson County, Tennessee

	On Campus	Off Campus	Total
Principal Investigator (Michael B. Collins) 1980 Academic Year Salary ($26,825) 1.5 months @ $2,683/mon. (15% FTE)		604.00	604.00
Summer 1981-82 Academic Year Salary ($29,508) 2 months @ $2,951/mon. (15% FTE)	885.00		885.00
1981-82 Academic Year Salary ($29,508) 6.5 months @ $2,951/mon. (15% FTE)	2,877.00		2,877.00
Fringe Benefits (Summer)	71.00		71.00
Fringe Benefits (Academic Year)	627.00		627.00
Co-Principal Investigator (Nancy O'Malley) 1980-81 Calendar Year Salary ($14,625) 1.5 months @ $1,219/mon. (10% FTE)		183.00	183.00
1981-82 Calendar Year Salary ($17,735) 8.5 months @ $1,478/mon. (10% FTE)	1,256.00		1,256.00
Fringe Benefits	226.00		226.00
TOTAL	5,942.00	787.00	6,729.00
Project Supervisor 10 months @ $1,253/mon.	10,650.00	1,880.00	12,530.00
Crew Chiefs (2) 225 hours @ $6.42/hr. x 2		2,889.00	2,889.00
Field/Lab Coordinator 225 hours @ $6.00/hr.		1,350.00	1,350.00
Field Assistance (Experienced) 200 hours @ $5.53/hr. x 6		6,636.00	6,636.00
Field Assistance (Inexperienced) 200 hours @ $4.85/hr. x 6		5,820.00	5,820.00
Laboratory Supervisor 173 hours @ $6.35/hr. (FY 1980-81) 173 hours @ $6.99/hr. (FY 1981-82)	1,099.00 1,209.00		1,099.00 1,209.00
Laboratory Assistance 346 hours @ $5.53/hr.	1,913.00		1,913.00

	On Campus	Off Campus	Total
Lithic Analyst 640 hours @ $6.42/hr.	4,109.00		4,109.00
Cook 200 hours @ $4.85/hr.		970.00	970.00
Ceramics Analyst 320 hours @ $6.42/hr.	2,054.00		2,054.00
Lab Assistance (Soil Samples) 45 hours @ $5.53/hr.	249.00		249.00
Data Manager 200 hours @ $6.42/hr.	1,284.00		1,284.00
Word Processor 100 hours @ $5.74/hr.	574.00		574.00
Secretary 80 hours @ $5.53/hr.	442.00		442.00
Editor 320 hours @ $6.99/hr.	2,237.00		2,237.00
Editorial Word Processor 160 hours @ $5.74/hr.	918.00		918.00
Draftsman 160 hours @ $5.53/hr.	885.00		885.00
Photographer/Illustrator 100 hours @ $5.53/hr.	553.00		553.00
Equipment Operator 225 hours at $5.53/hr.		1,244.00	1,244.00
TOTAL	28,176,00	20,789.00	48,965.00
FICA	1,874.00	1,382.00	3,256.00

Equipment Rental

Tractor w/plow, disc and bushhog		250.00	250.00
Backhoe		1,600.00	1,600.00
Security/Office trailer (1.5 months @ $2.50/mon.		375.00	375.00

	On Campus	Off Campus	Total
Pickup trucks (2) (1.5 months @ $310/mon. x 2)		930.00	930.00
Portajohns (1.5 months @ $55.00/mon. x 2)		165.00	165.00
Gasoline powered pumps (1.5 months @ $240.00/mon. x 2)		720.00	720.00
Laboratory trailer (1.5 months @ $400.00/mon.)		600.00	600.00
TOTALS		4,640.00	4,640.00
Per Diem			
Principal Investigators (22 days @ $35.00/day)		770.00	770.00
Project Supervisor (30 days @ $10.00/day		300.00	300.00
Crew Chiefs (2) (38 days @ $10.00/day x 2)		760.00	760.00
Field Assistance (nonlocal labor) (22 days @ $10.00/day x 6)		1,320.00	1,320.00
TOTALS		3,150.00	3,150.00
Travel			
Round trips between Lexington and site			
Principal Investigators (University vehicles) (300 miles @ .18/mi. x 10)		540.00	540.00
Project Supervisor (rental truck) (300 mi. @ .19/mi. x 8)		456.00	456.00
Laboratory Supervisor (University Vehicles) (300 mi. @ .18/mi. x 8)		432.00	432.00
On site travel (2 rental trucks) (3000 miles @ .19/mi.)		570.00	570.00
Transportation of backhoe		180.00	180.00
TOTAL		2,178.00	2,178.00

	On Campus	Off Campus	Total
Supplies			
Bags, containers ($20.00/day x 30)	600.00		600.00
Surveyor's Flags ($5.00/100 flags x 10)	50.00		50.00
Office supplies/forms ($10.00/day x 30 days)	300.00		300.00
Photographic Supplies/Processing ($35.00/day x 30 days)	1,050.00		1,050.00
Diesel fuel (30 gallons/day @ $1.35/gal. x 30)		1,215.00	1,215.00
Gasoline fuel (25 gallons/day @ $1.50/gal. x 30)		1,125.00	1,125.00
Construction supplies		75.00	75.00
Drafting supplies (2 months @ $60.00/mon.)	120.00		120.00
Office supplies (10 months @ $25.00/mon.)	250.00		250.00
TOTAL	2,370.00	2,415.00	4,785.00
Computer Support			
Computer time	1,000.00		1,000.00
Terminal Rental (2 months @ $140.00/mon.)	280.00		280.00
TOTAL	1,280.00		1,280.00
Duplicating and Binding			
Report (3 draft and 3 final copies)	148.00		148.00
General photocopying (2000 pages @ .05/page)	100.00		100.00
TOTAL	248.00		248.00

	On Campus	Off Campus	Total
Special Studies			
Sedimentological Analysis (18 samples @ $20.00/sample)	360.00		360.00
C-14 Dating (5 samples @ $135.00/sample)	675.00		675.00
Pollen Analysis (10 samples @ $45.00/sample)	450.00		450.00
TOTAL	1,485.00		1,485.00
Subtotal	41,375.00	35,341.00	76,716.00
Overhead (On Campus)	16,756.00		
(Off Campus)		6,503.00	23,259.00
TOTAL			99,975.00

APPENDIX D

Backhoe Trench Profile Descriptions

by
Jimmy A. Railey

Introduction

This appendix presents individual profile descriptions for the examined backhoe trenches at the Hurricane Branch Site. The data presented herein serves a supplementary role in relation to Chapter V which presents the results of the geologic study. Please refer to Chapter V, field methodology section, for further details.

Trench I

The profiled portion of this trench extended from N648.1 to E504.7 to N648.35 E507.24. This profile revealed stratified alluvium bearing no definite evidence of cultural occupation.

Zone A

This is the plowzone which consisted of a dark yellowish-brown sand loam that was very friable. Zone A was 35-40 cm thick, and exhibited an abrupt, clear boundary with Zone B.

Zone B

This zone consisted of two very thin (2-4 cm) bands of dark reddish-brown sandy loam with a notable content of clay-size particles. These bands were distinctly firmer than adjacent zones. The upper band of Zone B was discontinuous and partially separated Zones A and C. The lower band was continuous across the profile, separating Zones C and D at 50 cm below surface. All boundaries were abrupt to clear. Zone B has been interpreted as two incipient soil horizons developed on temporarily stabilized alluvium.

Zone C

This 10-15 cm thick zone generally underlies Zone A, in the middle and eastern portions of the bench and consists of a dark brown sand loam with a distinctly higher silt content than Zone A. It contained yellowish mottles (which increased with depth) and very small charcoal flecks.

Zone D

Underlying the lower band of Zone B, Zone D consisted of a dark yellowish-brown sand loam, 5-10 cm thick stratum, that was generally similar to Zone A. This zone became darker toward the west, and pinches out just east of the profiled wall. Zone D shared a gradual to clear boundary with the underlying Zone E at a depth of about 60 cm.

Zone E

This is a dark grayish-brown sand loam with a notable silt content, which ranges from 20 to 5 cm in thickness. It had a friable consistency and contained very small charcoal flecks at a depth of about 75 cm. Zone E exhibited an abrupt, wavy boundary with Zone F.

Zone F

This zone varied in thickness from 3 to 11 cm and was composed of a dark reddish-brown sand loam with a significant clay content (more so than Zone B). It was less friable than surrounding zones, and may represent another incipient soil horizon. Large charcoal flecks occurred here. Zone F shared an abrupt, wavy boundary with Zone G below.

Zone G

This was a dark grayish-brown (20-32 cm thick) stratum which was generally sandy, but some textural variability was evident between nondiscernible laminae. Zone G shared an abrupt, smooth boundary with the underlying Zone H at a depth of about 1 m below ground surface.

Zone H

This (4-10 cm thick) zone displayed overall similarities to Zone F, except that it contained no visible charcoal. Zone H exhibited a clear, smooth boundary with Zone I.

Zone I

This zone consisted of a 10-15 cm thick stratum of very dark yellowish-brown sand loam with a friable consistency. It exhibited a gradual, smooth boundary with Zone J and a clear, wavy boundary with Zone K.

Zone J

Occurring only in the western half of the profile under Zone I at a depth of approximately 1.2 m, this zone was similar to Zone I except that it was somewhat more reddish and contained a higher clay-size particle percentage than its overlying counterpart. Zone J exhibited a clear, smooth boundary with Zone K below.

Zone K

Underlying Zone I in the eastern half, and Zone J in the western half of Trench I, Zone K originated at a depth of about 1.2 m and ranged in thickness from 10-20 cm. It consisted of a dark yellowish-brown clayish silt-loam with a slightly firm consistency. It shared a gradual, smooth boundary with Zone L in the western half of the profile.

Zone L

This zone originated at a depth of 1.3 to 1.4 m, and was composed of a yellowish-brown silty clay loam with grayish mottling and iron staining. It exhibited a firm to very firm consistency. This zone was at least 30 m thick the basal portions were not observable.

Trench II

This trench was profiled along the N597.56 line from E528.80 to E533.7. It revealed developed soil horizons in stabilized alluvium which are described here as zones.

Zone A

This is the plowzone which was generally 30 cm thick, and consisted of a dark brown silty sand loam with a friable consistency. Cultural materials observed in this zone include debitage, small flecks of burned earth, one piece of red ochre and occasional charcoal flecks. Zone A exhibited a diffuse, broken boundary with Zone B.

Zone B

This zone consisted of a 20-40 cm thick discontinuous layer of reddish yellow-brown (mottled with dark brown and yellow) silt loam. Zone B possessed a firm consistency, becoming firmer with depth. Cultural materials were observed in this zone, including debitage and occasional charcoal flecks. Iron and manganese concretions occurred throughout this zone, becoming larger and more numerous with depth. Zone B shared a diffuse, broken boundary with Zone C.

Zone C

This was a yellowish-brown silt loam, grading downward to a silty clay. It exhibited a very firm consistency which increased with depth. Zone C contained many grayish and orange-brown mottles with large and small manganese concretions occurring throughout. Cultural materials were only visible in the uppermost portion of this zone.

Trench III

This trench was excavated along the N546.0 line from E475.6 to E479.2. The profile revealed stratified alluvium generally similar to that found in Trench I.

Zone A

This represents the 35-40 cm thick plowzone which consisted of a dark yellowish brown silty sand. Yellowish-brown and light gray mottling occurred, increasing with depth. The consistency of this zone was very friable. Very occasional chert flakes were observed in Zone A. The boundary with Zone B was very abrupt and smooth.

Zone B

This consisted of a 40-55 cm thick layer of dark brown sand loam with a friable consistency. Cultural materials were observed here, including charcoal and some burned reddish mottles, but only very occasional chert debris. Some darker areas with a greater amount of charcoal occurred in Zone B as well as a lighter, mottled area along the westernmost basal portion of Zone B.

Zone C

This is a thin band (generally 2 cm thick) of dark reddish-gray-brown sand loam with a notably higher clay content, and less friable consistency than surrounding zones. This zone has been interpreted as an incipient soil horizon formed in this sandy alluvium. Zone C contained no cultural materials and shared a clear, wavy boundary with the underlying Zone D.

Zone D

This zone was 20-30 cm thick, and generally similar to Zone B, except that it was lighter colored and contained no cultural materials. Zone D was separated from Zone E by a clear, smooth boundary.

Zone E

The characteristics of this 2-10 cm thick zone were nearly identical to Zone C except that Zone E was slightly more reddish in color. It shared a clear, smooth boundary with Zone F.

Zone F

This zone consisted of a light brown silt loam with a generally friable consistency. The value and friability of this zone decreased with depth. Zone F was culturally sterile.

Trench IV

This backhoe trench was located on the eastward slope of the low ridge traversing the site. The south wall of this trench lay along the N494.9 line from E520 to E523.8. The profile revealed developed soil horizons in stabilized alluvium overlain by mixed alluvium and cultural midden.

Zone A

The 25 cm thick plowzone in Trench IV consisted of a brown sandy silt loam with a very friable consistency. It contained cultural materials (flakes, fire-cracked rock, etc.) and shared an abrupt to clear, smooth boundary with Zone B.

Zone B

This zone was 20-30 cm thick and consisted of a dark brown silt loam with a friable consistency. It contained a dense amount of cultural materials, including debitage, fire-cracked rock and charcoal. A possible post mold protruded downward from this zone at E521.80. This feature was dark-colored and filled with general cultural debris, including a dense amount of charcoal. Zone B displayed a diffuse, broken boundary with Zone C, except at the western end of the profile, where this break became more clear.

Zone C

This 40-60 cm thick zone consisted of a dark yellowish-brown clayey silt loam, with a firm consistency. It was highly mottled with root casts (having rusty colored boundaries and filled with a grayish clay), and other features indicating nonhuman disturbance. Zone C contained a few small iron and manganese concretions. There was no definite *in situ* cultural material observed in Zone C. Zone C exhibited a clear, wavy contact with Zone D.

Zone D

This horizon was composed of a yellowish-brown clayey silt loam with a very compact consistency. It contained fewer root casts than Zone C, but more and larger concretions. No cultural materials were observed in Zone D.

Trench V

This trench was excavated further down the eastern slope of the low ridge, lying about 25 m east of Trench IV. The profile revealed a succession of zones similar to those in Trench IV, but cultural materials did not occur as deep here.

Zone A

This designation refers to the uppermost 50 cm of soil, including the plowzone which was not distinguishable. Zone A consisted of a dark brown silt loam with a slightly friable consistency. Lighter mottles and concretions appear toward the basal portion of this zone. Cultural materials occurred in Zone A, including a possible pit feature toward the eastern extreme of the profile. This feature was slightly darker, and exhibited a higher clay and moisture content than Zone B in general, but contained no obvious cultural materials in its matrix.

Zone B

Separated from Zone A by a gradual boundary, Zone B exhibited characteristics which were transitional between Zones A and D. In general, this 40 cm thick zone consisted of a mottled mosaic of dark yellowish-brown, yellowish-brown, and dark brown clayish silt loam, with valve decreasing and clay content increasing with depth. Zone B possessed a generally firm consistency which became firmer with depth. Very large concretions occurred in this zone, and a profusion of root casts was evident throughout. No cultural materials were observed here. Zone B shared a diffuse boundary with the underlying Zone C.

Zone C

This zone consisted of a yellowish-brown silty clay loam with extremely large (up to 1.5 cm in diameter) iron and manganese concretions. It was less mottled than Zone B, and exhibited a very firm consistency. No cultural materials were observed in Zone C.

Zone E

This designation refers to a light gray brown loosely consolidated clay loam occurring directly under the dark feature protruding downward from Zone A. It contained large concretions and showed very little mottling. No cultural materials were observed. Zone E may represent a natural disturbance.

Trench VI

This trench was excavated along the N500 line between E583.9 and E587.7. The profile revealed well-developed soil horizons in the stabilized alluvium. No cultural materials were observed in this trench.

Zone A

The plowzone in this trench was 20-30 cm thick, and consisted of a brown silt loam with a slightly friable consistency. This zone contains some dull orange-brown mottles in the basal portion, and exhibits an abrupt, smooth boundary with Zone B.

Zone B

This (10-15 cm thick) zone exhibited characteristics that were transitional between Zones A and C. It generally consisted of a dull orange-brown clayey silt loam with a dense concentration of root disturbances and iron and manganese concretions. Zone B possessed a slightly firm consistency and contained a few brown mottles. It shared a gradual boundary with Zone C.

Zone C

This (30-40 cm thick) zone consisted of a yellowish-brown silty clay loam with a firm to very firm consistency. It contained root casts and iron and manganese concretions, with these being more concentrated in the uppermost portion of this zone. Zone C shared a clear, smooth boundary with Zone D.

Zone D

This zone consisted of a light yellowish-brown silty clay loam with some iron staining, but very few concretions. Zone D possessed a very firm consistency.

Trench VII

This was the easternmost backhoe trench at the Hurricane Branch Site, being located along the N501 line between E613.2 and E617.2. The profile revealed well-developed soil horizons in stabilized alluvium with the topsoil having undergone considerable erosion.

Zone A

This zone was generally 50 cm thick, and consisted of a yellowish-brown silty clay with a very compact consistency. It contained iron and manganese concretions, and exhibited few mottles and root casts. Small chert flakes were observed in this zone. A gradual, smooth boundary was shared with Zone B.

Zone B

This zone consisted of a grayish yellow-brown clay loam with an extremely compact consistency. Small, durable iron and manganese concretions occurred in this zone. No cultural materials were observed.

Trench VIII

This trench was located on the crest of the low ridge which traversed the site. The south wall was situated along the N496.8 line between 494.55 and E496.6. The profile revealed a developed soil horizon in stabilized alluvium overlain by mixed alluvium and cultural midden.

Zone A

This 30-50 cm thick zone includes the plowed layer, which was not distinguishable, along with an undeterminable amount of subplowzone materials. Zone A consisted of a brown sandy silt loam with some mottling of pure silt. It exhibited a friable consistency, and shared a gradual boundary with the underlying Zone B. Most cultural materials (including debitage, charcoal and fire-cracked rock) in the profile were located in this zone.

Zone B

This is a 40-60 cm zone of dark yellowish-brown silt loam which contained light gray mottling. Zone B possessed a firm consistency, with many concretions and root disturbances. A few chert flakes were noted in this zone. Zone B shared a diffuse boundary with Zone C.

Zone C

This zone consisted of a yellowish-brown clayey silt loam with a very firm consistency. It contained more and larger concretions than Zone B and similar, but not as extensive, mottles. No cultural materials were observed here, although an occasional quartz pebble was noted.

Trench X

This trench was excavated on the westward slope of the main ridge, with the south wall being located between N493.85 E463.35 and N493.6 E466. The profile revealed stratified alluvium with incipient soil horizons and a single cultural-bearing stratum.

Zone A

This is the plowzone which consisted of a 10-30 cm thick layer of dark yellowish-brown fine sand that was well-sorted and exhibited a very friable consistency. It contained no observable cultural materials, and exhibited a generally abrupt, irregular lower boundary.

Zone B

This 20-40 cm thick zone was composed of a very dark grayish-brown fine sand with a friable consistency. A few dark yellowish-brown mottles occurred toward the upper portion; and yellowish gray-brown mottles toward the basal portions of this zone. Cultural materials observed here included a single spall of fire-cracked rock, a small limestone tempered sherd, and a chert flake. Zone B shared a clear wavy boundary with Zone C.

Zone C

This 10-30 cm thick zone consisted of a grayish yellow-brown fine sand that was well-sorted and exhibited a friable consistency. No cultural materials occurred in this zone. Zone C exhibited an abrupt, wavy boundary with Zone D and a clear, smooth boundary with Zone E in the eastern extreme of the profile.

Zone D

This zone consisted of a 6-10 cm thick band dull reddish tinted, gray-brown fine sand loam. It had a slightly friable consistency, but was distinctly more compact than surrounding zones. This zone has been interpreted as an incipient soil horizon and contained no cultural materials. Zone D shared an abrupt smooth boundary with Zone E.

Zone E

This (40 cm thick) zone was similar to Zone C, except that it possessed a very friable consistency. Zone E became slightly lighter below the inclusive Zone F and exhibited a very abrupt smooth contact with Zone G.

Zone F

This zone consisted of a thin (5-10 cm) band of reddish-tinted, light grayish-brown fine sand which became darker colored and finer textured west of E464.55. Its consistency was distinctly less friable than the surrounding Zone E, with which it shared abrupt contacts.

Zone G

Exhibiting fine laminations which altered between grayish-brown with a reddish tint, and light grayish-brown, Zone G consisted of a fine sand with a compact consistency. some cross-bedding was visible in the laminations. Root casts and iron staining occurred in the bottom exposed 5 cm and became more evident with depth.

Trench XI

This trench was only barely excavated through the plowzone before encountering one of two infant burials occurring at the site. The south wall revealed a dark brown fine sand (becoming lighter downward), with very large mottles of dark and very dark grayish-brown fine sand and silt occurring toward the base of the trench. A dense amount of cultural material occurred in this profile, especially in the darker mottles. The upper portion of Feature 4 was exposed in the western half of this profile.

Trench XIII

This trench was located on the eastern slope of the main ridge along the N375 line from E524.10 to E527.7.. The profile revealed developed soil horizons in stabilized alluvium. No cultural materials were observed in this trench.

Zone A

The (30 cm thick) plowzone in Trench XIII consisted of a grayish-brown silt loam, with light grayish mottlings occurring in the lower half of this layer and increasing downward. The consistency of this zone was slightly friable. Small concretions occurred here. The boundary with Zone B was abrupt and smooth.

Zone B

The subsoil in this trench consisted of a yellowish-brown clayey silt loam, with the valve and silt content decreasing with depth. Some grayish-brown mottles occurred in the uppermost portion of this zone and few root casts were present.

Trench XIV (Figure D-1)

This trench was located east of Trench XIII, with this profile wall extending between N374.65 E569.30 and N374.37 E572.22. The profile was generally similar to that of Trench XIII. No cultural materials were observed in this trench.

Zone A

This is the 10-25 cm thick plowzone which consisted of a grayish-brown clayey silt loam with some lighter mottling toward the base. The consistency was slightly firm. An abrupt smooth boundary was shared with Zone B.

Zone B

This 10-20 cm thick zone consisted of a yellowish-brown silty clay loam with a firm consistency. It contained large concretions and shared a clear smooth boundary with Zone C.

Zone C

This zone consisted of a yellowish-brown silty clay with a very firm consistency. Roots casts occurred, along with orange and light gray mottling. It contained some small concretions.

Trench XV (Figure D-2)

This trench was located on the crest of the main ridge in the southern half of the site. The south wall was situated along the N374.25 line between E464.35 and E467.55. The profile revealed silty and sandy deposition with a sealed cultural horizon.

Zone A

The (12-35 cm thick) plowzone was composed of a dark yellowish-brown silty sand loam that was extremely friable. No cultural materials were observed in this stratum. Zone A exhibited an abrupt, smooth lower boundary.

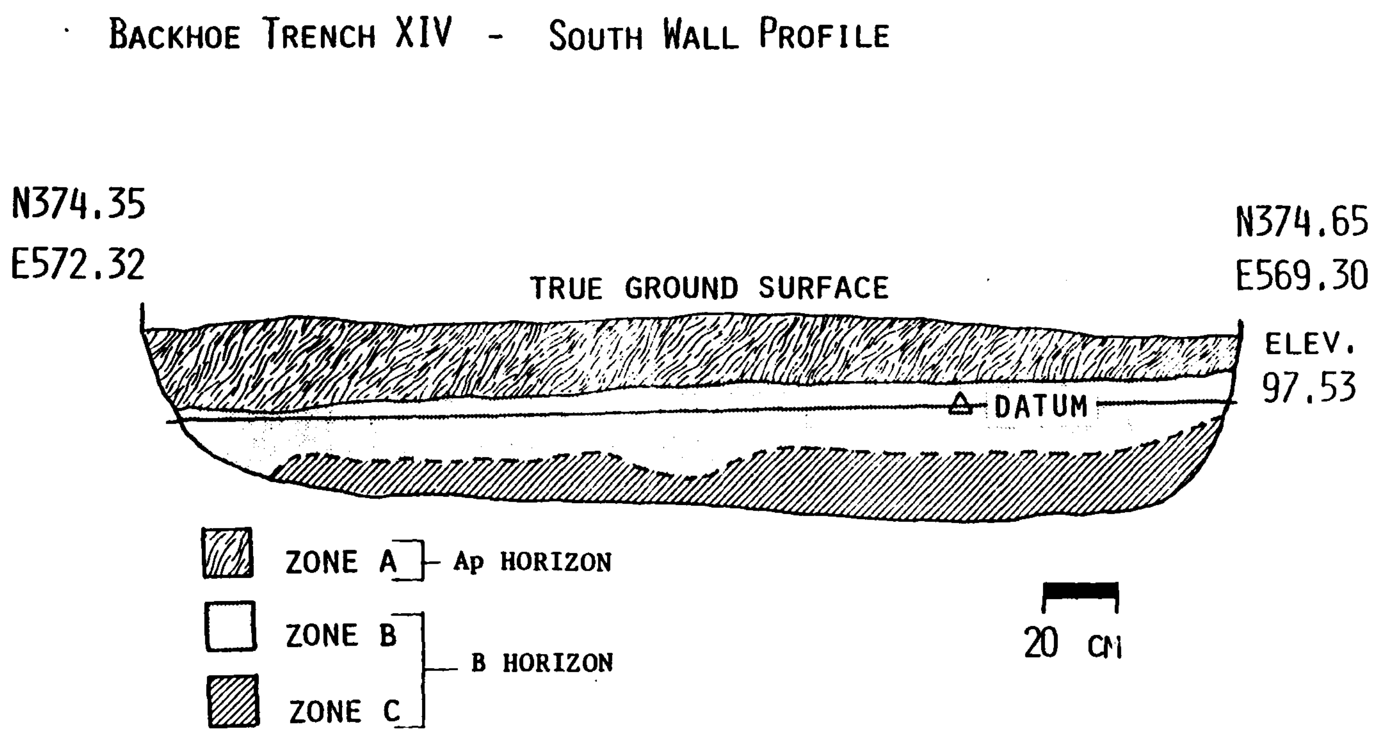

Figure D-1. South profile of Backhoe Trench XIV.

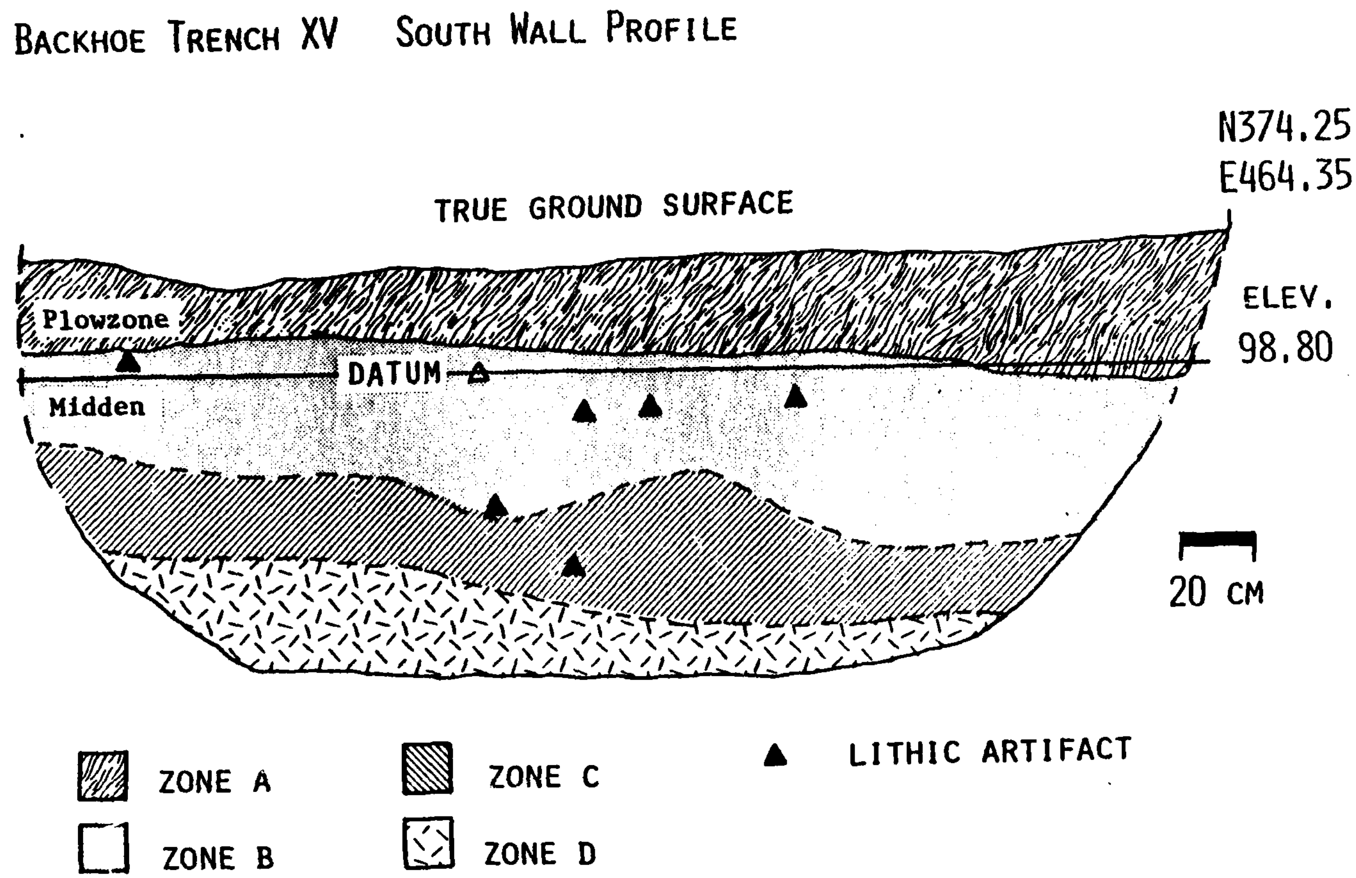

Figure D-2. South profile of Backhoe Trench XV.

Zone B

This is the cultural horizon which consisted of dark brown sandy silt (30-50 cm thick). Yellowish-brown mottles appear toward the basal portion of this zone and increase downward. This zone exhibited a slightly friable consistency. Cultural materials observed here include mostly waste debitage and a stemmed projectile point. A gradual boundary was shared with Zone C.

Zone C

This (20-40 cm thick) zone consisted of a dark yellowish-brown silt loam that was highly mottled with root casts and possessed a slightly firm consistency. Zone C yielded a single chert flake from the profile wall. The boundary between Zones C and D was diffuse and broken.

Zone D

This zone consisted of a yellowish-brown clayey silt with a firm consistency, and less mottled than Zone C. No cultural materials were observed here.

Trench XIX

This trench was located in the extreme southwestern portion of the site, located along the N300 line from E588.60 to E541.92. The profile revealed the familiar soil horizons in stabilized alluvium.

Zone A

This is plowzone which consisted of a 15-20 cm thick layer of grayish-brown silt loam with a slightly firm consistency. Chert flakes occurred in this zone and were also visible on the surface adjacent to this trench. Zone A exhibited an abrupt, smooth boundary.

Zone B

This was a discontinuous layer of loosely consolidated yellowish-brown (with a dull reddish tint) clayey silt.

This zone may represent a natural disturbance.

Zone C

This (5-10 cm thick discontinuous) zone consisted of a yellowish-brown clayey silt with a firm consistency. It contained some concretion with a dense concentration at the western end of the profile. Root casts appeared here as well, exhibiting rust colored boundaries and were filled with a light grayish clay. Zone C shared a gradual, broken boundary with Zone D.

Zone D

This zone consisted of a yellowish-brown silty clay loam with a very compact consistency. It contained more root casts than Zone C and light gray mottles appear in this zone. A moderate amount of concretions occurred here.

Trench XX (Figure D-3)

Backhoe Trench XX was excavated 52 m along the N505 line from E464 to E516. This allowed for an uninterrupted cross sectional view of the natural and cultural stratigraphy from near the bank of the Cumberland River through the summit area of the linear alluvial ridge traversing the site. This area also contained the overall densest concentration of cultural materials present at Site 40JK27. The profile revealed developed soil horizons in stabilized alluvium with cultural deposits in the eastern half, and more recent alluvium with a single cultural-bearing stratum in the western half.

Zone A

The 25-40 cm thick plowzone was collectively mapped as Zone A which grades in color from dark yellowish gray-brown in the eastern portions of Trench XX to dark yellowish-brown toward the western end of the trench, being overall darker toward the east. The texture of this zone is basically a sand loam, which becomes more silty toward the east, and more sandy toward the west. It has a very friable consistency (especially toward the west) and is nearly structureless. Toward the east from approximately E492, this zone contains a fairly dense amount of chipped stone

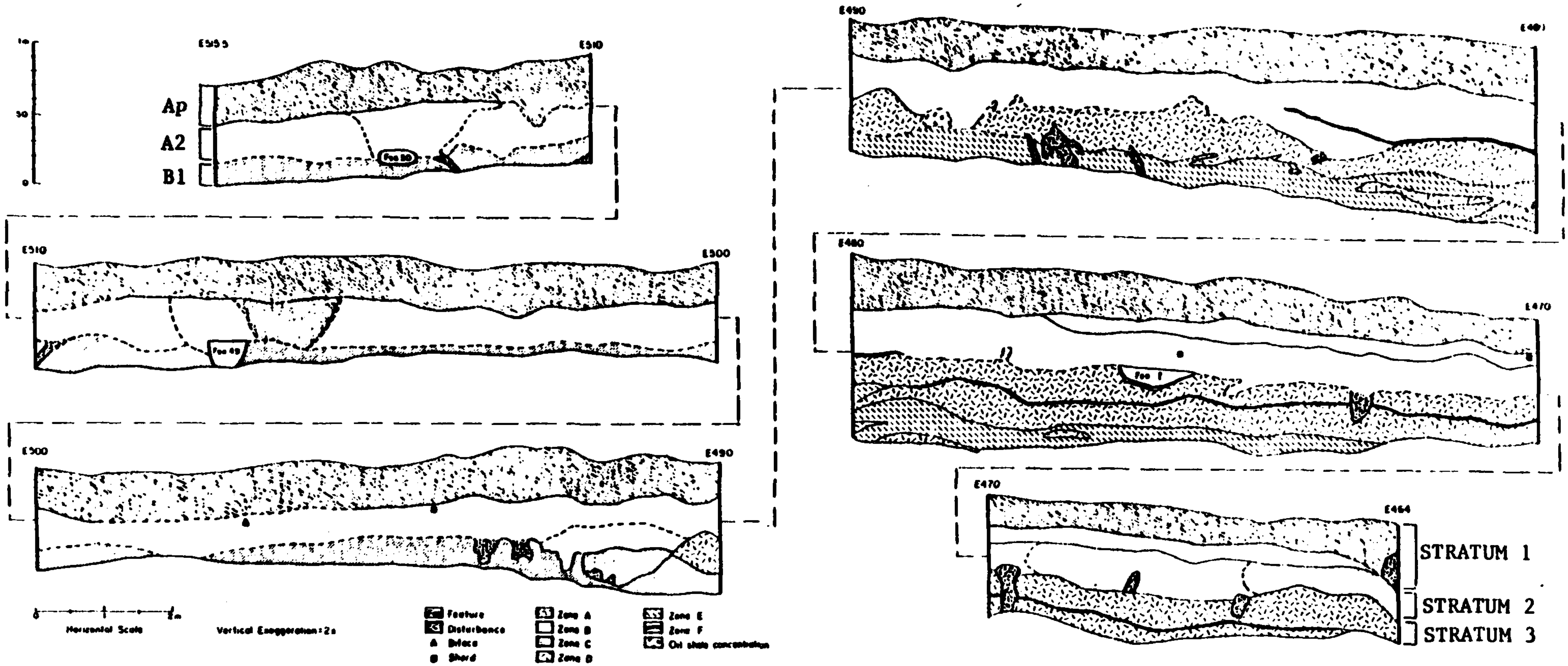

Figure D-3. South profile of Backhoe Trench XX.

debris, but is almost culturally sterile west of this point. Zone A exhibits a clear, wavy boundary with Zone B east of E488, with this contact becoming more abrupt and smooth in the western half of the trench.

Zone B

This zone (20-35 cm thick) continuously underlies Zone A in Trench XX, but like its overlying counterpart, Zone B exhibits notable gradational differences across the trench. The color of Zone B is generally dark grayish-brown, and is the darkest zone in the profile, especially toward the river. At the western extreme of this trench, Zone B is blackish in color, becoming dark grayish-brown between E466 and E469, then grades into more moderate grayish-brown tones to about the center of the profile. Reddish and yellowish tints become apparent around E488 increasing eastward. The value of Zone B varies laterally and vertically in the eastern half of Trench XX, where mottling is much more intense, making it sometimes indistinguishable from Zone A.

Texturally, Zone B is similar to Zone A, with overall grain size and friability increasing toward the riverbank, or western end of Trench XX. This zone is less friable than Zone A. This is more apparent in the western half of Trench XX, although Zone B is not as cohesive here as it is toward the east. Concretions, indicative of soil-forming processes, are present in Zone B only in the eastern half of the trench, where they become larger and increase with depth.

Throughout its exposed lateral extent in Trench XX, Zone B contains cultural material, which are much more abundant in the eastern half of the trench, including Features 49 and 50. However, all of the ceramics observed in Trench XX were found in Zone B in the western half of the trench.

Although the western half of the profile contained less cultural material than the eastern half, it was darker in color and richer in organics.

Zone B exhibited a diffuse, broken boundary with Zone C in the eastern half of Trench XX and a gradual irregular boundary with Zone D in the western half.

Zone C

This zone is present only in the eastern half of Trench XX, where it underlies Zone B and constitutes the lowermost zone in this portion of the trench. The basic color of Zone

C is yellowish-brown, with many large and small distinct mottles present, increasing upward. Texturally, this zone is a silt loam with a significant clay content which increases eastward and downward. Zone C has a firm consistency which becomes more firm with depth. It contains many small to large iron and manganese concretions which increase in number and size with depth. Root casts and iron staining are also apparent.

Zone C contained a very dense concentration of chipped stone debris throughout its vertical exposure, but these materials sharply decreased toward the western exposure of this horizon.

Zone D

This zone (generally 40 cm thick) occurred only in the western half of the profile, where it underlies Zone B. Zone D consisted of a dark yellowish-brown sand loam to fine sand with a friable consistency (slightly more friable than Zone B). This zone is culturally sterile. It exhibits clear to abrupt contacts with Zones E and F.

Zone E

Also restricted to the western half of Trench XX, Zone E was exposed only between E491 and E472. This zone underlies Zone D between E490 and E485 and was interbedded with this zone westward to E472. Zone E consisted of a dull reddish tinted, grayish-brown fine sand with a firm consistency. Faint laminations were visible in places, and roots with a few very small concretions were evident in the extreme eastern portion of this zone. Zone E was culturally sterile.

Zone F

Like Zones D and E, this zone occurred only in the western half of the profile. It consisted of two thin (generally 2 cm) bands of dark reddish-brown to grayish-reddish-brown fine sand loam with a distinctly higher clay content than the surrounding matrix. It possessed a slightly firm consistency which helped to distinguish it from bordering zones. The easternmost band of Zone F lay totally within Zone B between E484 and E483 and between Zone B and D westward to about E479. The western band of Zone F graded westward from a tongue of Zone E (which was superficially similar to Zone F), around E479 and was stratigraphically enclosed within Zone D. These bands were culturally sterile, and have tentatively been interpreted as incipient soil horizons which formed on temporarily stabilized alluvium.

Trench XXI (Figure D-4)

Backhoe Trench XXI was excavated 54 m along the N416 line from E430 to E484. This cut revealed stratified alluvium west of E468 with stabilized alluvium (showing much evidence of soil development) to the east. The horizontal stratigraphic situation is similar to that exhibited in Trench XX.

Along the western two-thirds of Trench XXI, standing water, dangerously deep mud accumulations on the floor, and severe slumping of the walls precluded an uninterrupted horizontal view of the stratigraphy. Therefore, only certain stratigraphic columns were cleared west of E468. The following stratigraphic description is based upon the profile between E413 and E456. Only impressionistic comments concerning the western half of the profile will be presented.

Zone A

This is the plowzone which consists of a 25-30 cm thick layer of grayish yellow-brown sandy silt loam east of E468. It has a friable to slightly firm consistency here, and generally exhibits a clear, smooth boundary with Zone B. Debitage occurred in moderate to scattered amounts in this portion of Zone A. Around E468, Zone A grades westward into a dark yellowish-brown sand loam and becomes very friable. Cultural materials were not observed in Zone A.

Zone B

This zone (generally 20 cm thick) only occurred east of E468 and consisted of a slightly reddish, gray-brown silt loam with some fine sand. It has a firm to very firm consistency, and is generally darker in color than the overlying Zone A. Chert debris was observed in Zone B which was somewhat more common toward the east. Root casts and very small concretions occurred toward the base of this zone. A diffuse, broken boundary separated Zone B from the underlying Zone C.

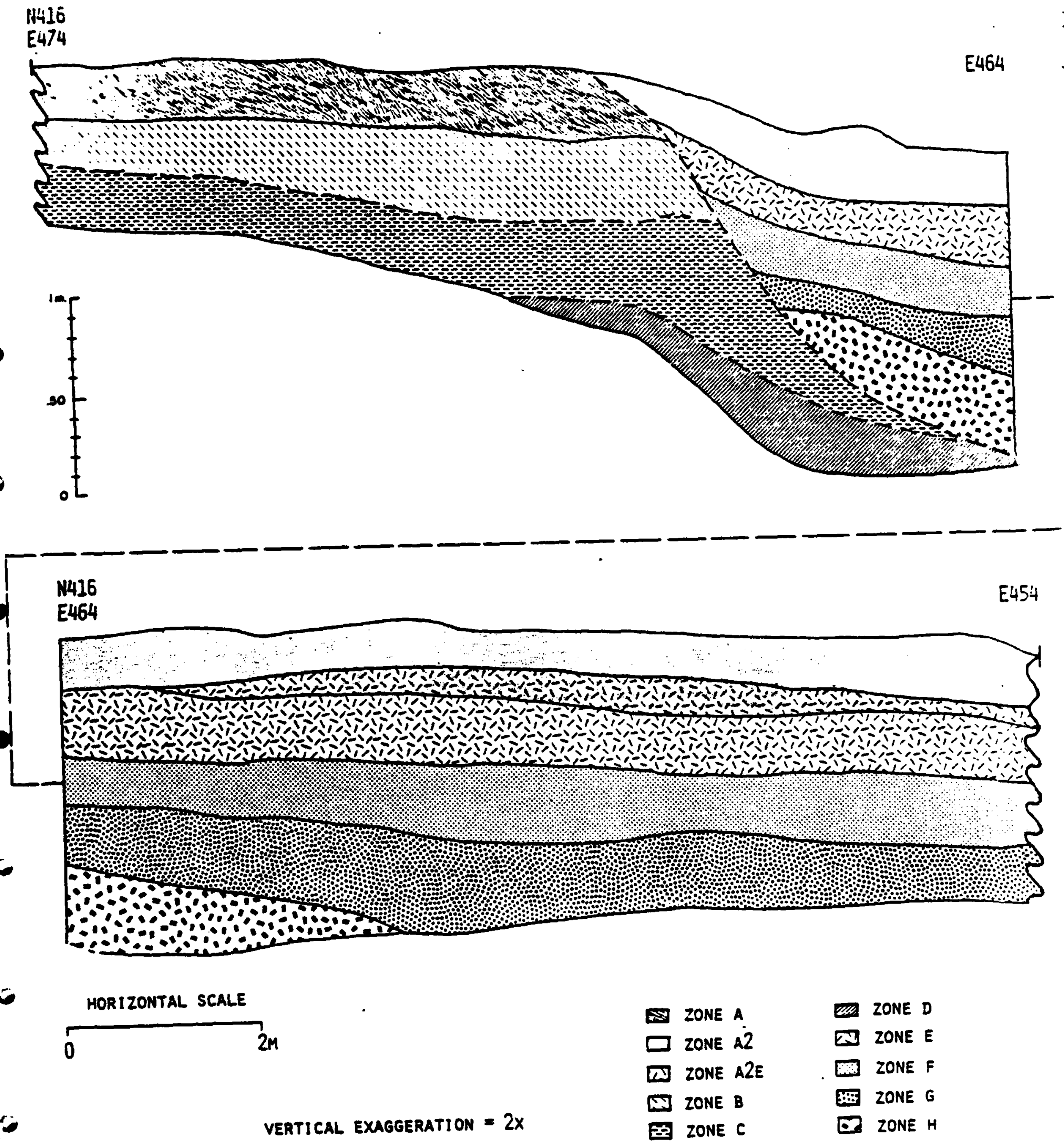

Figure D-4. South profile of Backhoe Trench XXI.

Zone C

This zone was only observable to the east of E466. It consisted of a dark yellowish-brown silt loam with a firmer consistency than Zone B, becoming firmer and lighter colored with depth. Small iron concretions and root casts occurred throughout this zone. Occasional chert flakes were observed here. Where observable, Zone C shared a gradual boundary with Zone D and two thicknesses of about 40 cm.

Zone D

This zone was observable only between E469 and E464 under Zone C. It consisted of a yellowish-brown silty clay with a very firm consistency that increased with depth. Large and small iron and manganese concretions occurred throughout this zone. No cultural materials were observed in Zone D.

Zone E

This stratum (generally 35 cm thick) occurred only to the west of E467 under Zone A. Zone E was composed of a grayish-brown sand loam with a friable consistency. A single chert flake was observed in this zone near E456. Appearing somewhere around E444, there occurred an intervening layer between Zones A and B, and is shown as Zone A/E since this zone exhibited characteristics which were transitional between the enclosing zones. Zone A/E shared clear, smooth boundaries with both Zone A and the underlying Zone E. There were no cultural materials observed in this zone.

Zone F

This 30 cm thick zone consisted of a slightly dark grayish-brown fine sand loam with similar consistency to the overlying Zone E. Two chert flakes were observed in this zone near E456.

Zone G

This stratum appeared around E458, and continued westward. Zone G consisted of a dark grayish-brown silt loam. It had a friable consistency, but was firmer than Zone F. A biface tip was noted in this zone near E456.

Zone H

This zone underlied Zone F between E467 and E458 with Zone G overlying it to the west. Zone H was 20-45 cm thick, and consisted of a dull yellowish-brown sandy silt, grading westward to a light grayish-brown fine sand. The consistency of this zone varied from friable around E464 to very friable near E456. No chert debris was noted in this zone; however, an oil shale fragment was noticed on it near E456.

Zone I

This zone was observable only between E465 and E461 under Zone H and dipped beneath the floor level of the trench westward. Zone I was composed of a dull yellowish-brown fine sandy silt loam. Its consistency was the firmest observed in Trench XXI with the exception of Zone D.

Trench XXI West

Westward from E456, the Trench XXI profile continued to exhibit sandy strata similar to Zones E-I, overlaid by an increasingly sandy plowzone. Incipient soil horizons, identical to Trench XX's Zone F, occurred westward from about E450. Five of these horizons were noted at various depths at the extreme western (levee) end of the profile. No cultural materials were observed in the western half of Trench XXI.

Trench XXII (Figure D-5)

This trench was the longest as well as the southernmost one excavated at the Hurricane Branch Site. Trench XXII extended 95 m along the N294 line from E405 to E500. Despite its length, Trench XXII did not exhibit a complex stratigraphy.

Zone A

This is the plowzone which, in the eastern half of the trench, consists of a dark yellowish-brown, friable silt loam. Some debitage occurred in this part of Zone A. This half of Zone A shared a gradual, wavy boundary with Zone B.

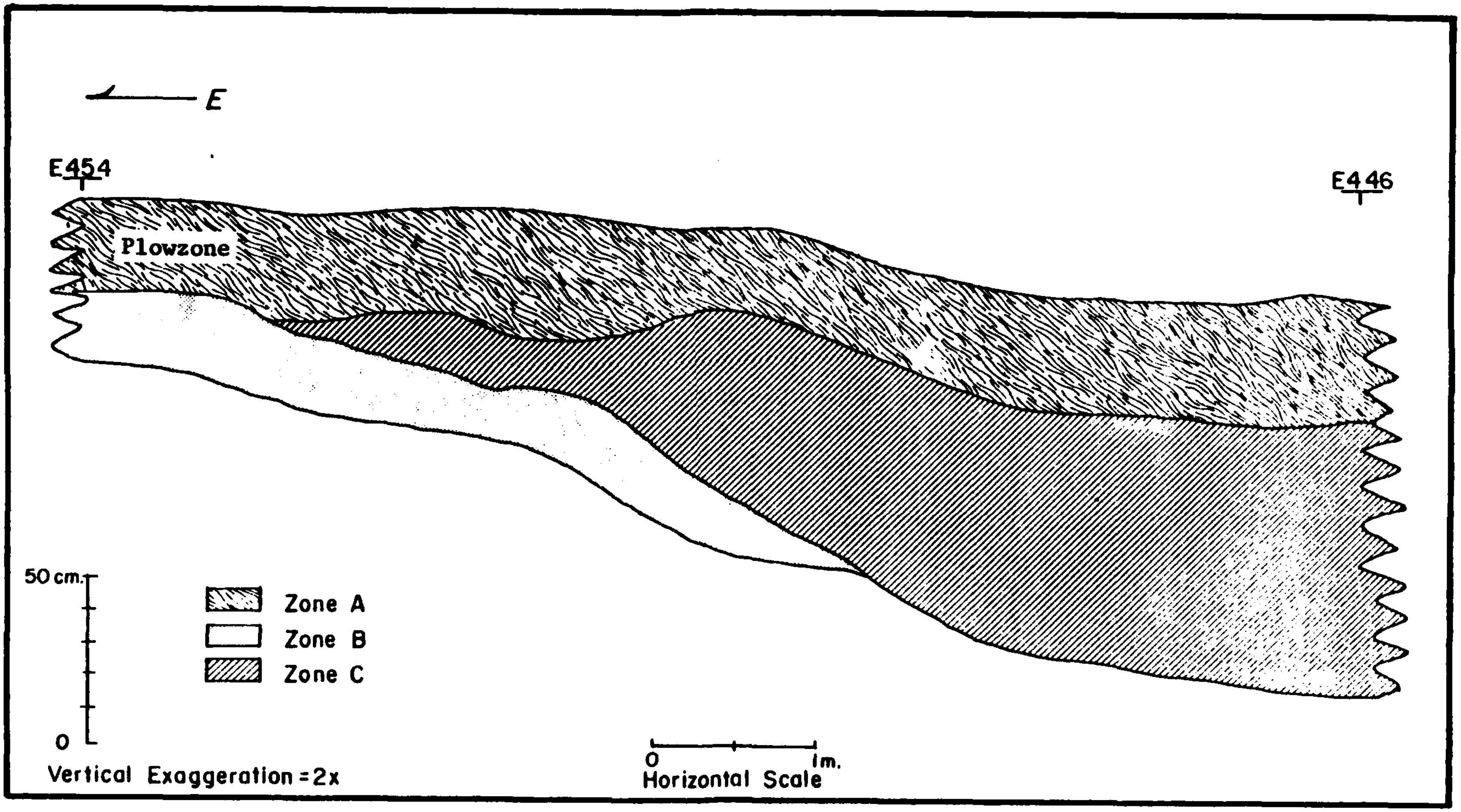

Figure D-5. South profile of Backhoe Trench XXII.

Around E451, Zone A grades westward into a grayish yellow-brown silty clay loam, with a firm consistency. No cultural materials were observed in this half of Zone A. Root molds occurred in the lower portion of Zone A for the length of the trench. Zone A was 30-40 cm thick and was separated from Zone C by an abrupt, smooth boundary.

Zone B

This zone was only observable east of E452, under Zone A, before dipping under Zone C to the west. Zone B consisted of a yellowish-brown silty clay to clay loam, with a firm to very firm consistency. Many root casts and large and small iron and manganese concretions occurred throughout this zone. No cultural materials were observed here.

Zone C

Occurring only in the western half of the trench, under Zone A, Zone C consisted of a dark brown silty clay loam with a very firm consistency. There was no internal stratigraphy visible within this zone. An isolated chert cone was observed in this zone at a depth of 44 cm below ground surface at E420. No other cultural materials were observed in this zone.

APPENDIX E

A Type and Provenience List of Historic Materials Recovered

Table E-1. Historic Materials Recovered.

Catalog No.	Bag No.	Frequency	Grid Loc.	Provenience Level	Provenience Unit	Description
84	414	2	N368/E500	Surface	-	clear bottle glass body fragments
236	471	1	N352/E492	Surface	-	clear bottle glass body fragments
584	505	1	N412/E496	Surface	-	horseshoe fragment
1504	689	1	N530/E463	3	102	bolt
1545	258	1	N476/E512	Surface	-	salt glazed stoneware basal fragment
1969	170	1	N468/E464	Surface	-	clear bottle glass body fragment
2186	753	1	N532/E464	1	107	.22 caliber shell fragment
2251	779	1	N530/E467	1	113	unidentifiable iron fragment
2282	750	1	N528/E492	2	109	wire nail
2418	756	1	N527/E465	1	111	.22 caliber shell fragment
2442	782	1	N529/E468	1	113	unidentifiable nail fragment
2530	786	1	N528/E467	1	116	square nail
2547	785	1	N532/E466	1	114	horseshoe fragment
2550	712	1	N529/E463	1	102	wire nail

Table E-1. Continued.

Catalog No.	Bag No.	Frequency	Grid Loc.	Provenience Level	Provenience Unit	Description
2654	824	1	N572/E516	1	123	clear glass cosmetic bottle; threaded closure
2897	952	1	N528/E483	1	128	wire nail
3667	928	1	N384/E477	1	130	bolt
4659	1225	1	N288/E496	Surface	-	horseshoe fragment
5924	1661	1	N428/E512	Surface	-	brown transfer printed ironstone basal sherd
8812	F135	2	N511.25/ E462.5	3	Feature 40-41	wire fragments
8879	F156	1	N512/E463.5	3	Feature 40-41	unidentifiable
9617	F089	1	N531/E465	3	114	wire nail
9907	772	1	N522/E508	1	112	chalk
9965	786	1	N528/E467	1	116	possible charcoal
10089	937	2	N528/E479	1	126	unidentifiable iron fragments
10128	1059	20	N530/E491	1	144	unidentifiable iron fragments
10258	760	1	N530/E465	1	111	square nail fragment
		50				

APPENDIX F

A Type and Provenience List of Prehistoric Materials Recovered

Table F-1. Artifacts by Surface Area at the Hurricane Branch Site.

ARTIFACT TYPE	SURFACE AREAS				
CHIPPED STONE	1	2	3	4	5
Stage I					
Unmodified Raw Material	3	7	24	13	3
Stage II					
Chunks	137	572	926	425	182
Flakes	1006	1909	3789	1250	548
Cores (Normal)	71	98	174	66	33
Cores (Aborted)	1	8	12	6	1
Ovate Uniface, Shallow Retouch (211311)	0	1	1	0	0
Ovate Uniface, Steep Retouch (211312)	1	2	1	1	0
Ovate Biface, Round Base					
(214913) Intact	0	0	0	1	0
(224913) Intact Aborted	0	0	1	0	0
Ovate Biface, Backed (214915) Intact	0	1	2	0	0
Triangular Biface, Round Base					
(224943) Intact Aborted	0	0	0	1	0
(Broken-244917)	0	0	1	0	0
Biface Fragment, Undetermined Base (244910)	0	0	1	0	0
Stage III					
Marginally Modified Flakes (311100)	5	9	22	14	5
Acute-Tipped Modified Flakes (31/341221)	1	2	4	3	2
Notched Modified Flakes (311231)	3	2	6	2	1
Excurvate Modified Flakes (31/341251)	5	7	11	1	4
Incurvate Modified Flakes (311261)	1	5	5	1	3
Straight Modified Flakes (31/341271)	7	10	21	7	4
Ovate Uniface, Shallow Circumferential Retouch (311311)	0	0	0	1	0
Ovate Uniface, Shallow Side Retouch (311313)	0	0	0	1	1
Ovate Uniface, Steep Side Retouch (311314)	0	0	1	0	0
Ovate Uniface, Steep End Retouch (311316)	0	0	1	0	0
Triangular Uniface, Shallow, Circumferential Retouch (311341)	0	0	0	1	0
Triangular Uniface, Shallow Side Retouch (311343)	0	0	0	1	0
Triangular Uniface, Steep Side Retouch (311344)	0	1	0	0	0
Quadrilateral Uniface, Steep Circumferential Retouch (311372)	1	0	0	0	0
Quadrilateral Uniface, Steep Side Retouch (311374)	0	0	1	0	0
Uniface Fragments (341300)	2	2	1	0	0
Ovate Biface, Straight Base, Round Corners					
Intact (314912)	0	1	0	0	0
Intact Aborted (324912)	0	0	1	0	0
Broken Aborted (334912)	0	1	0	0	0
Ovate Biface, Round Base					
Intact (314913)	1	0	0	0	0
Intact Aborted (324913)	0	1	2	2	1
Broken (344913)	1	0	1	2	0

ARTIFACT TYPE	SURFACE AREAS				
Chipped Stone - Stage III (Continued)	1	2	3	4	5
Bifacial Hoe (314914)	0	0	1	1	0
Backed Biface Intact (314915)	0	0	2	0	0
Backed Biface Broken (344915)	0	1	0	0	1
Triangular Biface, Straight Base, Angular Corners					
Intact Aborted (324941)	0	1	1	0	0
Broken Aborted (334941)	0	0	1	0	0
Broken (344941)	0	0	6	1	0
Triangular Biface, Straight Base, Round Corners					
Intact (314942)	0	1	0	0	0
Intact Aborted (324942)	0	1	1	0	0
Broken Aborted (334942)	0	0	1	0	0
Broken (344942	0	0	1	0	1
Triangular Biface, Round Base					
Intact (314943)	0	1	0	0	0
Intact Aborted (324943)	0	2	1	0	0
Broken (344943)	0	1	1	0	0
Bipointed Biface					
Intact (314980)	1	0	0	0	0
Broken (344980)	0	0	1	0	0
Biface Midsection Fragments (33/344900)	1	2	9	5	1
Biface Fragment, Straight Base, Round Corners (344902)	2	0	5	1	2
Biface Fragment, Round Base (344903)	0	2	2	1	3
Biface Fragment, Indeterminate Base (344910)	6	10	14	6	2
Biface Tips or Corners (344940)	2	4	9	2	4
Uniface - Biface Fragments (349300)	0	0	1	0	0
Stage IV					
Triangular Biface, Straight Base, Angular Corners					
Intact (414941)	1	0	0	0	1
Intact Aborted (424941)	0	0	1	0	0
Broken (444941)	0	0	0	1	0
Triangular Biface, Straight Base, Round Corners					
Broken Aborted (434942)	0	0	1	0	1
Broken (444942)	0	0	3	0	0
Triangular Biface, Round Base					
Broken (444943)	0	1	0	0	0
Biface Midsection Fragments (444900)	2	4	9	1	2
Biface Fragments, Straight Base, Angular Corners (444901)	2	3	2	2	1
Biface Fragments, Straight Base, Round Corners (444902)	0	0	1	0	0
Biface Fragments, Round Base (444903)	0	0	1	1	3
Biface Fragments, Indeterminate Base (444910)	1	0	1	1	0
Biface Tips or Corners (444940)	2	6	16	9	10
Lanceolate Biface 6 (444993)	1	0	1	0	0
Straight Stem 1 (McWhinney-like)					
Intact (412211)	0	0	0	1	0
Broken (442211)	0	0	1	0	0
Straight Stem 5 (442215)	1	1	0	0	0
Straight Stem 15 (Montgomary Stemmed)					
Broken (442218)	0	2	0	0	0
Straight Stem 17					
Intact (412234)	1	0	1	0	0
Broken (442234	0	1	0	0	1

ARTIFACT TYPE	SURFACE AREAS				
Chipped Stone - Stage IV (Continued)	1	2	3	4	5
Straight Stem 19 (Ledbetter)					
Intact (412236)	0	1	0	0	0
Broken (442236)	0	0	0	0	2
Straight Stem 26 (442243)	0	0	1	0	0
Straight Stem 27 (Wade)					
Broken Aborted (432244)	0	0	0	0	1
Broken (442244)	0	0	0	1	0
Straight Stem 28 (Little Bear Creek)(442245)	0	0	0	0	1
Straight Stem 32 (412249)	0	1	0	0	0
Straight Stem (unidentified)(442200)	0	0	0	1	0
Expanded Stem 15 (Mud Creek)					
Intact (412326)	0	0	1	0	0
Broken (442326)	0	0	0	0	1
Expanded Stem 16 (McIntire)(442334)	1	0	0	0	1
Expanded Stem 25 (Flint Creek-like)					
Intact (412335)	0	1	1	0	0
Broken (442335)	0	0	0	1	0
Expanded Stem 27 (Motley)					
Intact (412337)	0	0	1	0	0
Broken (442337)	0	0	0	0	1
Expanded Stem 70 (Manker Corner Notched)(442398)	0	0	1	0	0
Expanded Stem 84 (Manker Stemmed)(412526)	0	0	0	0	1
Expanded Stem 85 (Lost Lake)(442527)	0	1	0	0	0
Expanded Stem 94 (442536)	1	0	0	0	0
Expanded Stem 97 (442539)	1	0	1	0	0
Expanded Stem 98 (442540)	0	2	0	0	1
Expanded Stem (unidentified)(442300)	0	1	1	0	0
Bifurcated 1 (LeCroy)(412412)	0	0	0	0	1
Bifurcated 13 (Stanly Stemmed)(442432)	0	0	0	0	1
Contracted Stem 5 (Adena-like)					
Intact Aborted (422118)	0	0	1	0	0
Broken (442118)	0	0	2	0	0
Contracted Stem 6 (Pickwick)(442114)	1	1	1	0	0
Contracted Stem 24 (Morrow Mountain, Straight Base (442150)	0	0	0	0	1
Contracted Stem 25 (New Market)					
Intact (412119)	1	0	0	0	0
Broken (442119)	0	0	1	0	0
Contracted Stem 26 (Morrow Mountain, Round Base)					
Intact (412151)	0	0	0	0	1
Intact Aborted (422151)	0	0	0	0	1
Broken (442151)	0	1	0	0	0
Contracted Stem 27 (Morrow Mountain, Round Base, Elongated)(412152)	0	1	0	0	0
Contracted Stem 29 (442154)	0	1	0	0	0
Side Notched 1 (Big Sandy)(442613)	1	0	0	0	0
Side Notched 27 (Rowan-like)(412648)	0	0	1	0	0
Side Notched 28					
Intact (412646)	4	3	1	0	0
Broken (442646)	2	0	1	0	0
Side Notched 29					
Intact (412647)	1	0	0	0	0
Broken (442647)	1	0	0	0	1

ARTIFACT TYPE	SURFACE AREAS				
Chipped Stone - Stage IV (Continued)	1	2	3	4	5
Side Notched 30 (442649)	0	1	0	0	1
Side Notched 32 (442651)	0	0	2	0	0
Lanceolate 7 (Copena)					
Intact (412923)	1	0	0	0	0
Intact Aborted (422923)	0	0	1	0	0
Lanceolate 12 (Guntersville)					
Intact (412927)	0	0	1	0	0
Broken (442927)	0	1	3	0	0
Lanceolate 13 (Benjamin)(412928)	1	0	0	0	0
Triangular 2 (Ft. Ancient)(412932)	1	0	0	0	0
Triangular 9 (Nolichucky)					
Intact (412939)	0	0	1	1	0
Broken (442939)	0	0	0	0	1
Triangular 12 (Copena Triangular)					
Intact (412942)	0	0	1	0	0
Broken (442942)	0	2	18	1	2
Triangular 14 (Flint-River Spike)(422944)	0	0	1	0	0
Projectile Point Fragments	1	3	4	0	3
Contracted Stem, Unidentified (442100)	0	1	1	0	0
Drill 5 (Flared Base)(445712)	0	0	0	0	1
Drill 18 (445718)	0	0	1	0	0
Drill 22 (445950)	0	1	0	0	0
Drill 23 (415951)	0	0	1	1	0
Drill 25 (445753)	0	0	0	1	0
Drill Fragments	0	1	1	0	0
Stage V					
Reworked Expanded Stem 95 (Hamilton Stemmed)(513537)	0	0	1	0	0
Reworked Expanded Stem (Unidentified)(543390)	0	2	0	0	1
Reworked Contracted Stem 24 (Morrow Mountain, Straight Base)(513150)	0	0	1	0	0
Reworked Projectile Point Fragment (543021)	0	0	1	0	0
Miscellaneous Chipped Stone (550000)	2	1	3	6	0
GROUND STONE					
Pitted Stone (600005)	0	0	0	1	0
Battered Stone (600101)	0	0	1	0	0
(600/612/622102)	0	1	2	0	0
(600/602103)	1	0	3	0	0
(600109)	0	0	1	0	0
(600/602110)	1	1	1	0	0
(602/612/99)	3	1	4	0	1
Abraded Stone (600/619/622700)	0	0	2	1	1
Celts and Celt Fragments (621401;622428/429)	2	0	2	0	0
CERAMICS					
Unanalyzable Sherds	5	9	0	15	0
Limestone Tempered					
Residual	0	0	3	3	0
Plain	1	2	2	6	0
Cordmarked	2	0	0	0	0
Simple Stamped	0	0	0	1	0
Check Stamped	0	0	0	1	0
Shell Tempered Plain	0	2	0	0	0
Quartz Tempered Plain	0	0	1	0	0
TOTAL	1304	2726	5183	1873	847

Table F-2. Materials Recovered from the Test Units at the Hurricane Branch Site.

UNIT 100

Level 1

4 Chunks (110100)
1 Core (210000)
18 Unmodified Flakes (210100)

Level 2

5 Unmodified Flakes (210100)

Level 3

5 Chunks (110100)
14 Unmodified Flakes (210100)
1 Limestone Temper Plain Sherd (801010)

Level 4

28 Unmodified Flakes (210100)
1 Initial Reduction Biface tip/corner (244940)
1 Limestone Tempered Cordmarked Sherd (801020)

Level 5

4 Chunks (110100)
32 Unmodified Flakes (210100)
1 Limestone Tempered Plain Sherd (801010)
1 Limestone Tempered Simple Stamp Sherd (801030)

Level 6

15 Unmodified Flakes (210100)
3 Unanalyzable Sherds (800000)
1 Limestone Tempered Plain Sherd (801010)

Level 7

1 Chunk (110100)
5 Unmodified Flakes (210100)

Level 8

1 Fossil (600889)

Level 9

2 Unmodified Flakes (210100)

Level 10

10 Unmodified Flakes (210100)

UNIT 101

Level 1

3 Chunks (110100)
70 Unmodified Flakes (210100)
1 Notched Modified Flake (311231)

Level 2

2 Chunks (110100)
51 Unmodified Flakes (210100)
1 Marginally Modified Flake (311100)
1 Quadrilateral Uniface (Circumferential Steep Retouch)(311372)

Level 3

6 Chunks (110100)
1 Core (210000)
68 Unmodified Flakes (210100)
1 Crinoid Fossil Fragment (600890)
2 Limestone Tempered Residual Sherds (801000)
1 Shell Tempered Plain Sherd (803010)

UNIT 101 (Continued)

Level 4

4 Chunks (110100)
71 Unmodified Flakes (210100)
8 Unanalyzable Sherds (800000)
1 Burned Clay (810000)

Level 5

3 Chunks (110100)
10 Unmodified Flakes (210100)

Level 6

1 Unmodified Raw Material (110000)
1 Chunk (110100)
9 Unmodified Flakes (210100)

Level 7

1 Secondary Flaking Triangular Biface (Straight Base, Round Corners)(444942)

UNIT 104

Level 6

3 Unmodified Flakes (210100)

Level 7

2 Unmodified Flakes (210100)

Level 8

1 Chunk (110100)

UNIT 106

Level 1

8 Chunks (110100)
2 Cores (210000)
51 Unmodified Flakes (210100)
1 Marginally Modified Flake (311100)
1 Secondary Flaking Projectile Point Fragment (442010)
1 Secondary Flaking Biface Midsection (444900)
1 Contracted Stem 5 (Adena-like) (442118)

Level 2

12 Chunks (110100)
33 Unmodified Flakes (210100)

Level 3

1 Unmodified Raw Material (110000)
32 Chunks (110100)
54 Unmodified Flakes (210100)
1 Incurvate Edged Modified Flake (311261)
1 Primary Flaking Biface Tip/Corner (344940)
1 Limestone Temper Residual Sherd (801000)
7 Limestone Tempered Plain Sherds (801010)
1 Shell Tempered Plain Sherd (803010)
1 Sand Tempered Plain Sherd (806011)

Level 4

14 Chunks (110100)
1 Core (210000)
101 Unmodified Flakes (210100)

Level 5

5 Chunks (110100)
1 Core (210000)
54 Unmodified Flakes (210100)
2 Primary Flaking Biface Fragments (Indeterminate Base)(344910)

UNIT 106 (Continued)

Level 6

10 Chunks (110100)
33 Unmodified Flakes (210100)
1 Limestone Tempered Simple Stamp Sherd (801030)

UNIT 117

Level 1

31 Chunks (110100)
95 Unmodified Flakes (210100)
1 Acute-tipped Modified Flake (311221)
1 Primary Flaking Biface Fragment (Round Base)(344903)
1 Triangular 12 (Copena Triangular)(442942)

Level 2

12 Chunks (110100)
1 Core (210000)
52 Unmodified Flakes (210100)
1 Crinoid Fossil Fragment (600890)
1 Limestone Temperea Residual Sherd (801000)
2 Limestone Tempered Plain Sherds (801010)
1 Limestone Tempered Check Stamp Sherd (801050)

Level 3

3 Chunks (110100)
43 Unmodified Flakes (210100)

Level 4

2 Chunks (110100)
15 Unmodified Flakes (210100)

UNIT 122

Level 1

3 Unmodified Raw Material (110000)
72 Chunks (110100)
11 Cores (21/220000)
603 Unmodified Flakes (210100)
1 Marginally Modified Flake (311100)
2 Notched Modified Flakes (311231)
1 Excurvate Edged Modified Flake (311251)
1 Incurvate Edged Modified Flake (311261)
1 Straight Edged Modified Flake (311271)
1 Primary Flaking Triangular Biface (Straight Base, Round Corners)(314942)
1 Primary Flaking Triangular Biface (Straight Base, Angular Corners)(334941)
1 Primary Flaking Biface Fragment (Round Base)(344903)
1 Primary Flaking Biface Fragment (Indeterminate Base)(344910)
1 Triangular 3 (Copena Triangular)(414942)
1 Expanded Stem 96 (442538)
1 Side Notched 29 (442647)
7 Unanalyzable Sherds (800000)
2 Limestone Tempered Plain Sherds (801010)
1 Limestone Tempered Simple Stamp Sherd (801030)
1 Sand Tempered Residual Sherd (806000)
7 Burned Clay (810000)

Level 2

7 Chunks (110100)
120 Unmodified Flakes (210100)
1 Shell Tempered Plain Sherd (803010)

UNIT 122 (Continued)

Level 3

20 Chunks (110100)
92 Unmodified Flakes (210100)
1 Limestone Tempered Plain Sherd (801010)
1 Limestone Tempered Cordmarked Sherd (801020)
3 Limestone Tempered Simple Stamp Sherds (801030)
1 Limestone Tempered Incised Sherd (801080)

Level 2

6 Chunks (110100)
69 Unmodified Flakes (210100)
1 Secondary Flaking Biface Midsection (444900)
1 Crinoid Fossil Fragment (600890)
8 Unanalyzable Sherds (800000)
6 Limestone Tempered Plain Sherds (801010)
1 Shell Tempered Residual Sherd (803000)
3 Burned Clay (810000)

Level 3

1 Unmodified Raw Material (110000)
9 Chunks (110100)
2 Cores (210000)
75 Unmodified Flakes (210100)
1 Initial Reduction Ovate Biface (Round Base)(224913)
1 Primary Flaking Triangular Biface (Straight Base, Angular Corners)(344941)
1 Crinoid Fossil Fragment (600890)
8 Unanalyzable Sherds (800000)
1 Limestone Tempered Residual Sherd (801000)
7 Limestone Tempered Plain Sherds (801010)
3 Burned Clay (810000)

UNIT 130

Level 1

18 Chunks (110100)
2 Cores (210000)
151 Unmodified Flakes (210100)
1 Primary Flaking Biface Fragment (Indeterminate Base)(344910)
1 Contracted Stem 30 (Dickson)(442155)

Level 2

4 Unmodified Flakes (210100)
1 Expanded Stem 25 (Flint Creek-like)(442335)

Level 3

1 Unmodified Flake (210100)

UNIT 136

Level 1

17 Chunks (110100)
64 Unmodified Flakes (210100)
1 Marginally Modified Flake (311100)
1 Side Notched 22 (Matanzas)(442641)

Level 2

8 Chunks (110100)
39 Unmodified Flakes (210100)
1 Straight Edged Modified Flake (311271)

Level 3

1 Unmodified Raw Material (110000)
1 Chunk (110100)
6 Unmodified Flakes (210100)
1 Primary Flaking Biface Tip/Corner (344940)

Table F-3. Artifacts by Cultural Series at the Hurricane Branch Site.

ARTIFACT CATEGORY	1A	1B	1C	2A	2B	2C	3A	3B	3C
CHIPPED STONE									
Stage I									
Unmodified Raw Materials (110000)	0	4	18	5	13	0	0	2	5
Chunks (110100)	475	212	479	275	164	113	1295	3244	192
Stage II									
Flakes (210100)	3755	2750	5815	1361	577	1776	10836	30494	3301
Cores - Normal (210000)	28	18	46	90	205	6	14	12	25
Aborted (220000)	0	3	3	1	15	1	2	0	1
Ovate Uniface									
Shallow Retouch (211311)	0	0	1	0	1	0	0	0	0
Steep Retouch (211312)	0	0	0	1	1	0	1	0	0
Ovate Biface, Round Base									
Intact Aborted (224913)	0	0	0	0	2	0	0	0	0
Broken Aborted (234913)	0	0	1	0	2	0	0	0	0
Triangular Biface, Straight Base, Angular Corners Intact (214941)	0	0	0	1	0	0	0	0	0
Triangular Biface, Straight Base, Angular Corners Broken Aborted (234941)	0	0	0	0	1	0	0	0	0
Triangular Biface, Straight Base, Round Corners Intact Aborted (224942)	0	0	0	1	0	0	0	0	0
Triangular Biface, Round Base									
Broken Aborted (234943)	0	0	0	0	2	0	0	0	0
Broken (244943)	0	0	0	0	1	0	0	0	0
Biface Fragments									
Round Base (234903)	0	0	1	0	1	0	0	0	1
Indeterminate Base (244900)	0	0	0	0	2	0	0	0	1
Chopper (214359)	0	0	0	0	0	1	0	0	0
Stage III									
Marginally Modified Flake (311100)	9	3	13	17	14	2	4	0	0
Acute Tipped Modified Flake(311221)	0	1	0	2	0	0	0	0	0
Notched Modified Flake (311231)	1	0	2	5	2	0	1	0	0
Excurvate Modified Flake (311251)	4	2	5	7	8	0	3	1	2
Incurvate Modified Flake (311261)	1	2	1	7	4	2	0	0	1
Straight Modified Flake (311271)	2	1	2	13	7	1	5	0	1
Modified Flake Fragments	0	0	0	2	0	1	0	0	0
Ovate Uniface, Circumferential Shallow Retouch (31/341311)	1	0	0	0	0	0	0	0	1
Ovate Uniface, Circumferential Steep Retouch (341312)	0	0	1	1	0	0	0	0	0
Ovate Uniface, Steep End Retouch (341316)	0	0	0	0	1	0	0	0	0
Ovate Uniface, Shallow Side Retouch (311313)	0	0	0	1	1	0	0	0	0
Quadrilateral Uniface, Steep Side Retouch (311374)	0	0	0	0	0	0	0	1	0
Uniface Fragments	0	0	1	2	3	0	0	0	0
Quadrilateral Uniface-Biface, Circumferential Shallow Retouch (319371)	0	0	0	0	1	0	0	0	0

ARTIFACT CATEGORY	1A	1B	1C	2A	2B	2C	3A	3B	3C
CHIPPED STONE									
Stage III (Continued)									
Quadrilateral Uniface-Biface, Steep End Retouch (319376)	0	0	0	0	0	0	0	0	1
Uniface-Biface Fragments (349300)	0	0	1	0	0	0	0	0	0
Ovate Biface, Straight Base, Angular Corners, Intact Aborted (324911)	1	0	0	0	0	0	0	0	0
Ovate Biface, Straight Base, Round Corners, Intact (314912)	0	0	0	0	1	0	0	0	0
Intact Aborted (324912)	0	0	0	0	0	0	0	1	0
Ovate Biface, Round Base, Intact (314913)	0	0	0	1	1	0	0	0	0
Intact Aborted (324913)	1	0	1	3	0	0	0	0	0
Broken Aborted (334913)	0	0	0	0	0	0	1	0	0
Triangular Biface, Straight Base, Angular Corners, Intact (314941)	0	0	0	1	0	0	0	0	0
Intact Aborted (324941)	0	1	0	0	0	0	0	0	0
Broken Aborted (334941)	0	0	1	0	1	0	0	0	0
Broken (344941)	0	0	0	0	3	0	0	0	0
Triangular Biface, Straight Base, Round Corners, Intact (314942)	1	0	0	0	0	0	0	0	0
Intact Aborted (324942)	0	1	0	0	0	0	0	0	0
Broken Aborted (334942)	0	0	0	0	1	0	0	0	0
Broken (344942)	0	0	1	1	2	0	0	0	0
Triangular Biface, Round Base Intact Aborted (324943)	0	0	0	0	2	0	1	0	0
Broken (344943)	0	0	1	0	0	0	0	0	0
Biface Fragments Midsections (33/344900)	2	1	2	3	2	0	1	1	0
Straight Base, Round Corners (344902)	1	2	2	1	2	0	0	0	1
Round Base (344903)	0	1	6	1	2	0	0	0	2
Indeterminate Base (33/344910)	3	2	3	8	8	1	0	0	2
Tips/Corners (33/344940)	0	2	9	6	6	0	0	1	1
Uniface-Biface Fragments (349300)	0	1	0	0	0	0	0	0	0
Stage IV									
Lanceolate Biface 6 Intact (414993)	0	0	0	0	1	0	0	0	0
Broken (444993)	0	0	0	0	2	0	0	0	0
Triangular Biface, Straight Base, Angular Corners (444941)	0	0	0	1	1	0	0	0	0
Triangular Biface, Incurvate Base, (444947)	0	0	0	0	0	0	0	1	0
Biface Fragments Midsections (444900)	2	4	2	7	5	1	2	2	0
Straight Base, Angular Corners (444901)	2	0	1	7	2	0	0	0	2
Round Base (444903)	0	0	0	0	2	0	0	0	1
Indeterminate Base (444910)	0	0	0	1	1	0	0	0	0
Tips/Corners (444940)	3	3	2	12	14	1	4	0	0

ARTIFACT CATEGORY	1A	1B	1C	2A	2B	2C	3A	3B	3C
CHIPPED STONE									
Stage IV (Continued)									
Projectile Points									
Straight Stem 5 Intact (412215)	0	0	0	1	0	0	0	0	0
Broken (442215)	0	1	0	0	0	0	0	0	0
Straight Stem 27 Intact (412244)	0	0	0	0	1	0	0	0	0
Broken (442244)	0	0	0	0	1	0	0	0	0
Straight Stem 29 (442246)	0	0	0	0	1	0	0	0	0
Straight Stem 30 (Coosa)(442247)	0	0	0	0	0	0	1	0	0
Expanded Stem 1 (Kirk)(442311)	0	0	1	0	0	0	0	0	0
Expanded Stem 15 (Mud Creek) (412326)	0	1	0	0	0	0	0	0	0
Expanded Stem 16 (McIntire-like) (412334)	1	0	0	0	1	0	0	0	0
Expanded Stem 25 (Flint Creek-like) (412335)	1	0	0	0	0	0	0	0	0
Expanded Stem 26 (Jack's Reef Corner Notched)(442336)	0	0	0	0	0	0	1	0	0
Expanded Stem 27 (Motley)(412337)	0	0	0	0	0	0	1	0	0
Expanded Stem 40 (Snyders)(442359)	1	0	0	0	0	0	0	0	0
Expanded Stem 69 (Palmer)(442397)	0	0	0	0	0	0	0	1	0
Expanded Stem 74 (Lowe)(442516)	1	0	0	0	0	0	0	0	0
Expanded Stem 98 (442540)	0	0	0	0	1	0	0	0	0
Unidentified Expanded Stem(442300)	0	0	1	0	0	0	0	0	0
Bifurcated 1 (LeCroy)(442412)	0	0	1	0	0	0	0	0	0
Contracted Stem 5 (Adena-like)									
Intact (412118)	0	0	0	0	0	0	0	1	0
Broken (442118)	0	0	0	0	0	0	0	1	0
Contracted Stem 6 (Pickwick) (442114)	1	0	0	0	1	0	0	0	0
Contracted Stem 22 (Eva II) (412148)	1	0	0	0	0	0	0	0	0
Contracted Stem 26(Morrow Mountain, Round Base)(412151)	1	0	0	1	0	0	0	0	0
Contracted Stem 27 (Morrow Mountain Round Base, Elongated)(412152)	0	0	0	0	0	0	0	0	1
Contracted Stem 28 (Gary)(412153)	0	0	0	0	1	0	0	0	0
Contracted Stem 30 (Dickson)									
Intact (412155)	0	0	0	0	0	0	1	0	0
Broken (442155)	0	0	0	0	0	0	0	1	0
Side Notched 1 (Big Sandy)									
Intact (412613)	0	0	1	0	0	0	0	0	0
Broken (442613)	1	0	0	0	0	0	0	0	0
Side Notched 9 (Brewerton Side Notched)(412621)	0	0	0	1	0	0	0	0	0
Side Notched 27 (Rowan-like) (442648)	0	0	0	0	1	0	0	0	0
Side Notched 28 Intact (412646)	0	0	0	3	3	0	0	0	0
Broken (442646)	0	0	0	0	1	0	0	0	0
Side Notched 29 Intact (412647)	0	0	0	0	3	0	0	0	0
Broken (442647)	0	0	0	2	3	0	0	0	0
Side Notched 30 Intact (412649)	0	0	0	0	1	0	0	0	0
Intact Aborted (422649)	0	0	0	0	1	0	0	0	0
Side Notched 31 (Pine Tree)(412650)	0	0	1	0	0	0	0	0	0
Side Notched 32 (442651)	0	0	0	1	2	0	1	0	0
Lanceolate 7 (Copena)(412923)	0	0	1	0	1	0	0	0	0

ARTIFACT CATEGORY	1A	1B	1C	2A	2B	2C	3A	3B	3C
CHIPPED STONE									
Stage IV (Continued)									
Triangular 1 (Madison)(442931)	0	0	0	0	1	0	0	0	0
Triangular 9 (Nolichucky)(412939)	0	0	0	0	1	0	0	0	0
Triangular 12 (Copena Triangular) (442942)	0	0	0	2	1	0	1	0	2
Triangular 13 (Candy Creek) (412943)	0	0	0	0	1	0	0	0	0
Projectile Point Fragments (442000/2010/2020/2030)	2	3	2	5	5	0	0	0	2
Drill 20 (415948)	0	0	0	1	0	0	0	0	0
Drill 21 (Owl Hollow)									
Intact (415949)	0	0	0	0	1	0	0	0	0
Broken (445949)	1	0	0	0	0	0	0	0	0
Drill Fragments (445710/40)	1	0	1	0	3	0	0	0	0
Stage V									
Reworked Expanded Stem 69 (Palmer) (513397)	1	1	0	0	0	0	0	0	0
Reworked Side Notched 22 (Matanzas) (513641)	1	0	0	0	0	0	0	0	0
Reworked Unidentified Expanded Stem (543390)	0	0	0	0	0	0	0	0	1
Miscellaneous Chipped Stone (550000)	1	0	2	4	5	0	1	1	0
GROUND STONE									
Pitted Stone (600005, 602000, 600007, 610009)	0	0	2	0	2	0	0	0	0
Battered Stone									
(602101)	0	0	1	0	0	0	0	0	0
(600103)	0	0	2	0	0	0	0	0	0
(600106)	0	0	0	0	1	0	0	0	0
(600109/610109)	0	0	0	1	3	0	0	0	0
(600110)	0	0	0	0	1	0	0	0	0
(602199)	1	1	1	0	1	0	0	0	0
Abraded Stone (610700)	0	0	1	0	0	0	0	0	0
Grinding Slab (603004)	0	0	1	0	0	0	0	0	0
Celts and Fragments (622428/429)	0	0	0	0	4	0	0	0	0
Drilled Garget Fragment (622830)	0	0	0	0	1	0	0	0	0
CERAMICS									
Unanalyzable Sherds	105	30	25	928	3745	53	42	37	4
Limestone Temper Residual	6	0	1	37	244	5	1	5	0
Limestone Temper, Unidentified Surface	0	0	0	3	37	1	0	0	0
Limestone Temper, Plain	6	14	2	106	1307	14	10	18	10
Limestone Temper, Cord Marked	0	1	0	4	59	0	0	0	0
Limestone Temper, Simple Stamp	1	3	0	23	361	4	0	1	0
Limestone Temper, Complicated Stamp	0	0	0	0	7	0	0	0	0
Limestone Temper, Check Stamp	0	1	0	4	36	2	1	2	0
Limestone Temper, Net Impressed	0	0	0	0	1	0	0	0	0
Limestone Temper, Incised	0	0	0	0	7	1	0	1	0
Keys Plain, Residual	0	0	0	1	0	0	0	0	0
Keys Plain	0	0	0	20	0	0	0	0	1

ARTIFACT CATEGORY	1A	1B	1C	2A	2B	2C	3A	3B	3C
CERAMICS (Continued)									
Shell Temper, Residual	7	1	0	52	25	1	0	0	0
Shell Temper, Plain	9	0	0	52	36	1	1	0	0
Quartz Temper, Plain	0	0	0	0	1	0	1	1	0
Sand Temper, Residual	0	0	0	1	0	1	0	0	0
Sand Temper, Plain	0	0	0	0	1	0	0	0	0
Sand Temper, Simple Stamp	0	0	0	1	0	0	0	0	0
Burned Clay	50	14	4	205	687	22	3	10	28
TOTAL	4,492	3,085	6,472	3,304	7,695	2,011	12,236	33,840	3,590

APPENDIX G

A Partial List of Ethnographical and
Botanical Resources of the
Eastern and Southeastern United States

by

Thomas W. Gatus

Table G-1. A Partial List of Ethnographical and Botanical Resources of the Eastern and Southeastern United States.

COMMON NAME (Latin name)	COMMENTS	COMMON HABITAT	CULTURAL AFFILIATION	SOURCE
Acorns (Quercus sp.) Used in breads and for oil		Bluff; ridge forest	Most Southeastern Indians	Swanton 1979:265, 273, 277, 279
Arrow-Arum or (Redfruit) (Peltandra sageittaefolia) Roots eaten		Swamps; shallow water	Southern Indians	Yanovsky 1936:10
Arrowhead (Swamp Potato) (Sagittaria latifolia) Roots eaten	Taken from muskrat caches	Wet swamps; shallow waters	Southeastern Indians	Hudson 1976:285 Yarnell 1964:71
Ash (Fraxinus sp.) Used for bows and arrows		Open woods; secondary growth areas	Southeastern Indians	Hudson 1976:273 Yarnell 1964:52, 158-159
Aspen (Big Tooth) (Populus gradidentata) Roots used in medicine; cambium eaten		Alluvial woods; hillsides	Ojibway	Yarnell 1964:156-157
Aster (Aster sp.) Leaves boiled and eaten with fish; used in medicine		Moist open woods; thickets; rocky slopes	Chippewa and Potawatomi	Yanovsky 1936:60 Yarnell 1964:162
Barberry, American (Berberis canadensis) Berries eaten		Appalachian mountains	Eastern Indians	Yanovsky 1936:25
Basswood (Tilia americana L.) Provides textiles such as bags and burden straps; used for dugout canoes		Alluvial woods; slope forest; occasionally on talus slopes	Universal, except in extreme South. Also found in Hopewell Mounds in Ohio.	Whitford 1941:11 Yarnell 1964:52
Bean (Phaseolus vulgaris) Beans eaten	Several species of Phaseolus grown	Bottom lands	Most Eastern and Southeastern Indians	Yanovsky 1936:38

Table G-1. Continued.

Bear grass (Rattlesnake Master) (*Eryngium yuccifolium*)				
Provides textiles such as bags, sandals, cordage and fabric		Open grassland	Menomini; Found in Rockshelters of Arkansas, Kentucky, Ohio and Tennessee	Whitford 1941:12 Yanovsky 1936:21
Beech, American (*Fagus grandifolia*)				
Nuts eaten fresh and stored; used for wooden bowls; buds eaten; leaves used in medicine		Uplands	Iroquois, Menomini Ojibway and Potowatomi	Yanovsky 1936:18 Yarnell 1964:67, 192
Beggar-Lice (*Hackelia virginiana*)				
Pharmaceutical; used to treat kidney ailments		Woods and thickets	Appalachian mountains	Keel 1976:8
Blackberry (*Rubus allegheniesis*)				
Berries eaten; used in medicine	Many species available	Disturbed areas	Most Southeastern and Eastern Indians	Hudson 1976:286 Medsger 1973:28-29 Yarnell 1964:59, 158
Buckeye (*Aesculus* sp.)				
Used to poison fish	Both nuts and roots used	Rocky talus slopes	Eastern Indians	Swanton 1979:342
Bunchberry (*Cornus canadensis*)				
Fruit eaten; used in medicine		Mountains; woodland thickets	Northeast and northern Midwest	Yanovsky 1936:41 Yarnell 1964:63, 172
Butternut (*Juglans cinerea*)				
Nuts eaten; used in medicine; used in dye		Alluvial woods	Most Northern, Eastern and Upper Midwest Indians	Yarnell 1964:67-68

Table G-1. Continued.

Cane (species not specified) Seeds eaten; used for baskets, mats, fishtraps, arrows, walls of houses, beds, corn cribs, knives, torches, boxes, cradles, seives, fanners, hampers, blowguns, blowgun arrows, shields, stockades, fences, rafts, litters, tubes for blowing, into medicine, drills, smoking, braids for hair, tubes for blowing out fires when burning out morters	River banks; alluvial woods	Most Southeastern Indians	Swanton 1979:244
Cane (Arundinaria Tecta Mull.) Provides fiber for rope and moccassins; Seeds eaten	River banks; alluvial woods	Ohio	Whitford 1941:21 Hudson 1976:287
Cat-tail (Typha latifolia L.) Used for mats; shoots, flowering ends and seeds eaten	Swampy areas	Tennessee; Ojibway and Menomini and Potowatomi	Whitford 1941:2 Yanovsky 1936:6 Yarnell 1964:6
Cedar, Red (Juniperus virginiana) Used for bags and mats; pharmaceutical uses Used by Chippewa with yew to relieve rheumatism	Disturbed areas; uplands	Potowatomi, Chippewa and Ojibway	Whitford 1941:1 Densmore 1928:362 Yarnell 1964:186
Cherry, Wild Black (Prunus serotina) Berries eaten; infusion made of twigs; used in medicine	Open spaces; disturbed areas	Most Eastern Indians	Keel 1976 Yanovsky 1936:33 Yarnell 1964:62, 158
Chestnut (Castanea dentata) Eaten raw, also pulverized for soup and breads	Slope forest	Most Southeastern Indians	Swanton 1979:272 Yarnell 1964:66-67

Table G-1. Continued.

Chinquapin (Castanea pumila) Nuts strung as beads	Well-drained upland forest	Most Southeastern Indians	Swanton 1979:244-245
Choke-berry, Red (Aronia arbutifolia) Used in pemmican — Habitat information derived from Black Choke-berry	Bluff and ridge forest; low woodlands	Northeastern Indians	Yanovsky 1936:30 Radford et al. 1968:558
Chokecherry (Prunus virginiana) Used as a medicinal beverage; berries eaten	Disturbed areas; edge of woods	Menomini, Ojibway and Potawatomi	Yarnell 1964:158
Cinnamon Fern (Osmunda cinnamomea) Young fronds boiled for soup	River banks; alluvial woods	Menomini	Yanovsky 1936:4
Cockspurgrass (Echinochloa Beau V.) Seeds ground into meal	Disturbed areas	Southeastern Indians	Hudson 1976:286
Corn (Zea mays) Eaten in various forms; used for tanning, erasing tatoo marks, smudge, ceramics decoration, cord	Floodplains; terraces	Most Southeastern Indians	Swanton 1979:244 Whitford 1941:22
Crabapple (Malus coronaria L.) Fruit eaten	Secondary growth; disturbed areas	Most Southeastern Indians	Hudson 1976:286 Yarnell 1964:66
Crinkleroot (Dentaria diphylla) Roots eaten raw with salt and boiled	Moist woods; along streams	Iroquois	Yanovsky 1936:27
Currant, Red or Drooping (Ribes triste) Berries eaten; used in medicine	Wet woods; bogs	Iroquois, Ojibway and Chippewa	Yanovsky 1936:30 Yarnell 1964:57, 168
Currant, Wild Black (Ribes americanum) Berries eaten; in Western U.S. berries used in pemmican	Wet woods; bogs	Iroquois, Ojibway, Sauk and Fox	Yanovsky 1936:29 Yarnell 1964:57

Table G-1. Continued.

Dahoon (Ilex cassine)				
Leaves used for tea substitute		Swamps along Gulf and Atlantic Coasts; bogs and cypress ponds	Creek	Yanovsky 1936:41 Radford et al. 1958:681
Dandelion (Leontodon taraxacum)				
Leaves used as greens; roots used as salad		Open areas	Eastern states	Yanovsky 1936:62
Dangleberry (Gaylussacia frondosa)				
Berries eaten		Moist woods; thickets	Southern states	Yanovsky 1936:51
Dewberry, Southern (Rubus trivialis)				
Berries eaten		Stony, dry soil; disturbed areas	Most Southeastern and Eastern Indians	Yanovsky 1936:35
Devil's Shoestring (Cocculus carolinus and Tephrosia virginiana)				
Roots used as fish poison	Pounded with wooden mallets and cast on shallow waters	Sandy ridges	Southeastern Indians	Swanton 1979:343 Hudson 1976:284
Dingleberry (Vaccinium erythrocarpum)				
Berries eaten		Thickets; rocky woods	Georgia	Yanovsky 1936:51
Dog-tail Weed (Cynosurus cristatus or echinatus)				
Provides a dye which is dark red to black		Disturbed areas	Southeastern Indians	Swanton 1979:607
Dogwood, Silky (Kinnikinnik) (Cornus amomum)				
Fruit eaten; used in medicine; smoked		Marshes and swamps; alluvial woods; river banks	Louisiana; Shawnee and Menomini	Yarnell 1964:172 Yanovsky 1936:49
Elder, American (Sambucus canadensis)				
Berries eaten fresh or cooked; blossoms used as a beverage	Scarlet Elder used the same way	Disturbed areas; moist areas	Iroquois, Ojibway, Sauk and Fox	Yanovsky 1936:58 Yarnell 1964:65
Elder, Box (Acer negundo)				
Used as food seasoning; used in medicine		Alluvial woods	Northern states and Mid-south	Yanovsky 1936:41 Yarnell 1964

Table G-1. Continued.

Elm, American (*Ulmus americana* L.) Used for burden straps; used in medicine; cambium eaten	One species used for making baskets by the Shawnee	Alluvial woods; hillsides; rocky ledges; slopes	Iroquois, Ojibway and Shawnee	Whitford 1941:12 Alford 1936:39 Yarnell 1964:157
Elm, Slippery (*Ulmus rubra* muhl.) Woven into fabric and textiles; cambium eaten; used in medicine		Alluvial woods	Ojibway, Potawatomi and Menomini; Also found in Ohio Hopewell mounds; New York	Whitford 1941:12 Yarnell 1964:51
Ginger, Wild (*Asarum canadense*) Used as a beverage and food seasoning; used in medicine		Rich woods	Ojibway and Sauk-Fox and Potawatomi	Yarnell 1964:152
Gooseberry (*Ribes cynosbati*) Berries eaten; used in medicine		Rocky woods	Most Northeastern Indians	Hudson 1976:286 Yarnell 1964:58, 168
Goldenrod (*Solidago* sp.) Used as a medicinal beverage; smoked; used to attract deer		Disturbed areas	Potawatomi, Ojibway and Menomini	Yarnell 1964:162
Gourds (*Lagenaria* sp.) Used as floats on nets; used to store hickory oil; young gourds eaten		Open areas	Most Southeastern Indians; Ojibway	Swanton 1979:337, 366
Grape, Muscadine (*Vitis rotundifolia*) Eaten		Alluvial woods	Most Southeastern Indians	Swanton 1979:260, 272, 288 Crawford 1978
Grape, Frost (*Vitis ripari*) Used in medicine		River banks; thickets	Ojibway, Iroquois, Sauk-Fox and Menomini	Yarnell 1964:159
Grapevine (*Vitis* sp.) Used as a substitute for cord		Alluvial woods	Southeastern Indians	Swanton 1979:244

Table G-1. Continued.

Grass (species not specified)				
Used in clothing; mixed with mud for daub		Open areas	Southeastern Indians;	Swanton 1979:247 Crawford 1978
Greenbriar (Smilax pseudo China and Smilax L. as well as other species)				
Roots eaten; used in soups, breads and jelly		Dry or sandy soil; one species in alluvial woods	Creeks and other Southeastern Indians	Hudson 1976:285 Yanovsky 1936:14
Gound Cherry (Physalis lanceolata)				
Fruit use not given; probably eaten	At least 4 other species of Physalis were eaten	Disturbed areas	Eastern and Southeastern states	Yanovsky 1936:56
Indian Potato (Marsh Potato or Ground Nut) (Apios american Medic.)				
Eaten	Collected year round, but best from late summer to spring	Alluvial woods	Southeastern Indians; Iroquois, Ojibway and Menomini	Swanton 1979:270 Hudson 1976:285 Yarnell 1964:53
Gum, Black (Nyssa sylvatica)				
Berries eaten; used for awl handles, mauls and war clubs		Alluvial woods	Southeastern Indians; Ojibway	Hudson 1976:286 Yarnell 1964:190
Hackberry (Celtis occidentalis)				
Fruit and seeds pounded finely and used to flavor meat	Berries ripen in September but remain attatched to the tree all winter	Dry, rocky soil	Minnesota and New York; Prehistoric Woodland sites sites	Yanovsky 1936:19 Yarnell 1964:72
Hawthorn, Thicket (Crataegus coccinea)				
Fruit eaten; used in medicine; smoked	Several species utilized	Disturbed areas	Eastern and Southeastern Indians	Yanovsky 1936:30 Yarnell 1964:180
Hazlenut (Corylus americana)				
Nuts used as food and dye; used in medicine; used for basket ribs	Good crop every 2 or 3 years	Open woods; thickets	Ojibway, Menomini, Kickapoo and Iroquois	Yarnell 1964:63, 192
Hickory (Carya sp.)				
Wood used for building houses; used for shafts, fishing	Broken with stones and pounded in mortars with water to make a	Rocky talus slopes; uplands; alluvial woods	Most Southeastern, Eastern and Midwest Indians	Swanton 1979:172-173 245, 265, 303 Yarnell 1964:68, 188

Table G-1. Continued.

crails, and as firewood; used in pottery making; "Red Hickory" used for pestles; "White Hickory" used for bows; ashes used as salt substitute; nuts used for oil	milk used for flavoring			
Hog-Peanut (*Amphicarpa bracteata*)				
Fruit eaten raw or boiled; used in medicine	Vole nests were raided by Indians to obtain this plant	Alluvial woods	Eastern states	Yanovsky 1936:37 Yarnell 1964:70
Holly, American (*Ilex opaca*)				
Leaves used as tea substitute		Alluvial woods; talus slopes; slope forest	Southeastern states	Yanovsky 1936:41
Huckleberry, Black (*Gaylussacia baccata*)				
Berries eaten		Dry, sandy or rocky soil	Southeastern states	Hudson 1976:286 Yanovsky 1936:50 Yarnell 1964:57
Indian Breadroot (Nashville Breadroot) (*Psoralea esculenta* or *subacaulis*)				
Roots eaten fresh and cooked or ground into flour and made into cakes		Prairie	Eastern states (rare)	Yanovsky 1936:38
Indian Hemp (*Apocynum cannabinum*)				
Provides nets, burden straps; cord and fabric		Disturbed areas; open woods; thickets; edge of woods	Arkansas; Iroquois and Nanticoke; Hopewell and Adena	Whitford 1941 Yarnell 1964:191
Indigo, Yellow wild (*Baptisia tinctoria*)				
Shoots used like asparagus		Dry, open woods	Northeast and Mid-South	Yanovsky 1936:36
Inkberry (*Ilex glabra*)				
Leaves used as a tea substitute		Alluvial woods; pine barrens; savannahs; and coastal areas	Eastern states	Yanovsky 1936:41 Radford et al. 1968:684

Table G-1. Continued.

Jack-in-the-Pulpit (Arisaema triphylium) Corms eaten; used in medicine	Moist woods	Iroquois, Ojibway, Potawatomi and Menomini	Yanovsky 1936:10 Yarnell 1964:53
Jerusalem Artichoke (Helianthus tuberosa) Roots eaten raw or boiled	Dry, disturbed areas	Southeastern and Northern Indians	Hudson 1976:285 Yanovsky 1936:61
Kentucky Coffee Tree (Gymnocladus dioica) Seeds roasted and eaten like nuts	Alluvial woods	North, Mid-South and Midwest	Yanovsky 1936:36
Lady's Bouquet (Galium triflorum) Used as a medicinal beverage and perfume	Woods and thickets	Menomini	Yarnell 1964:161
Lamb's Quarters (Chenopodium album) Seeds ground into meal; leaves eaten	Disturbed areas	Wisconsin and Minnesota; most Southeastern Indians	Hudson 1976:287 Yanovsky 1936:22 Yarnell 1964:55, 70
Leatherwood (Dirca palustris) Provides textiles such as bags; used in medicine; used as a beverage	River bottoms; alluvial woods	Winnebago, Ojibway and Potawatomi; Ohio Adena	Whitford 1941:20 Yarnell 1964:159, 190
Life Everlasting (Catfoot) (Gnaphalium obtusifolium) Pharmaceutical uses Used to treat a wide variety of ills	Disturbed areas	Appalachian Mountains	Keel 1976:8 Yanovsky 1936
Lily, Atamasco (Atamasco atamasco) Bulbs eaten in times of stress	Low woods; wet meadows (Coastal Plain)	Creek	Yanovsky 1936:16
Locust, Black (Robinia pseudoacacia) Seeds boiled for food and mixed into soups and stews; wood used for bows	Edge of woods	Pennsylvania; most of the Mid-South and Midwest	Hudson 1976:273 Yanovsky 1936: 39 Medsger 1972:121

Table G-1. Continued.

Locust, Honey (Gleditsia triacanthos) Pods crushed, used as sweetner		Alluvial woods; hill slopes	Southeastern Indians, particularly in the Mississippi regions	Crawford 1978 Hudson 1976:287 Yanovsky 1936:36
Lotus, American (Nelumbo lutea) Seeds, roots and leaves eaten; tubers boiled with meal		Alluvial woods	Southeastern and Eastern Indians;	Hudson 1976:287 Yanovsky 1936:25 Yarnell 1964:71
Maple (Acer sp.) Roots yield a dark purple dye	Sap collected in Northeast	Alluvial woods	Southeastern Indians	Swanton 1979:607
Maple, Red (Acer rubrum) Sap used for making sugar; bark dried and pounded into flour; cambium used in medicine	Other species of Maple used for similar purposes	Alluvial woods	Northern states and Mid-South	Yanovsky 1936:41 Yarnell 1964:170
Marshelder (Iva annua) Seeds eaten		Moist woods	Kentucky	Cowan 1979:10-11 Radford et al. 1968:1016
Marsh Marigold (Caltha palustris) Stems and leaves boiled for greens; the rest of the plant provides medicine		Swamps and marshes	Eastern Indians	Yanovsky 1936:25 Yarnell 1964:53, 167
May-Apple (Mandrake) (Podophyllum peltatum) Fruit eaten raw or cooked		Open woods; disturbed areas	Iroquois and other Eastern Indians	Yanovsky 1936:26 Yarnell 1964:60
Maypop (Passiflora incarnata L.) Fruit eaten	Ripens in early summer; does not preserve well archaeologically; according to Hedeger, Captain John Smith reported it as cultivated by Virginia Indians	Dry ground	Southeastern Indians	Hedeger 1972:59 Keel 1976 Yanovsky 1936:43 Hudson 1976:286

Table G-1. Continued.

Mexican Tea (Worm Seed) (*Cheopodium ambrosioides*)			
Paramaceutical uses; used to get rid of worms	Disturbed areas	Southeastern Indians	Hudson 1976:287 Radford et al. 1968:418
Milkweeds (general) (*Asclepias* sp.)			
Fibers used to make fine threads and cords, cloths, burden straps, fishnets, and wampum belts; used in tying spears to shafts; European variety used to treat gonorrhea	Alluvial woods; slope forest	Prehistoric and protohistoric Indians	Whitford 1941:9 Keel 1976:8
Milkweed (no specific common name) (*Asclepias syriaca*)			
Used for fishnets, burden straps, cords, bags, drum string and cord for tying spears to shafts; used as a hunting charm; flowers stewed and eaten (Chippewa); greens eaten (Iroquois)	Alluvial woods; disturbed areas	Cherokee, Delaware, Matchapunga, Micmac, Iroquois, Ojibway, Kickapoo, Potawatomi, Sauk and Fox	Whitford 1941:19-22 Yanovsky 1936:53 Yarnell 1964:54, 173
Milkweed (no specific common name) (*Asclepias pulchra*)			
Used for fabric and netting	Alluvial woods; disturbed areas	No data	Whitford 1941:19-22
Milkweed (Butterfly-Weed or Pleurisy-Root) (*Asclepias tuberosa*)			
Used in medicine; used for string, cord, wampum belts and fabric; shoots boiled like asparagus and eaten as greens	Disturbed areas	Arkansas (state) Delaware, Sauk and Fox	Whitford 1941:19-22 Yarnell 1964:53 Yanovsky 1936:53
Milkweed, Swamp (*Asclepias incarnata*)			
Fiber used for textiles; used in medicine; buds used in soup or added to corn meal mush	Alluvial woods; disturbed areas	Menomini and Ojibway	Yarnell 1964:56, 173 Yanovsky 1936:52

Table G-1. Continued.

Mint (Pycanthemum sp.) Used to season fish; used in medicine		Open areas; grasslands	Southeastern Indians	Swanton 1979:343 Yarnell 1964:74
Mint, Virginia Mountain (Koellia virginiana) Flowers and buds used as food seasoning		Woods	Chippewa	Yanovsky 1936:54 Radford et al. 1968: 918
Mushroom (no specific common name) (Pachyma cocas Fries)	Grows at the foot of walnut trees	Trees grow in alluvial woods and on talus slopes	Natchez and Cherokee	Hudson 1976:287 Yanovsky 1936:25
Mushroom, Edible Morel (Morchella sp.) Eaten		Forest floors	Iroquois	Yanovsky 1936:2 Ison 1982:personal communication
Mushroom, Giant Puffball (Lycoperdon giganteum) Eaten	Cooked; fried and made into soup	No data	Iroquois	Yanovsky 1936:2 Ison 1982:personal communication
Mushroom, Meadow (Agaricus campestris) Eaten		No data	Iroquois	Yanovsky 1936:2 Ison 1982:personal communication
Mushroom, Sulphus (Polyporus sp.) Eaten	Grows at the base of Alder trees	No data	Iroquois	Yanovsky 1936:2 Ison 1982:personal communication
Mulberry (Morus sp.) Berries eaten; used as a beverage and food seasoning	Good crop every 2 to 3 years	Disturbed areas; river bottoms	Most Eastern and Southeastern Indians	Hudson 1976:286 Yarnell 1964:152
Nettle (Laportea canadensis?) Used for bow strings, wampum string, bags and cordage to tie spears to shafts; used for cloth; used in medicine		Alluvial woods; less common on slopes	Tennessee; Menomini and Iroquois; Ojibway and Sauk-Fox; Ohio Hopewell	Whitford 1941:12-13, 22 Yarnell 1964:151

Table G-1. Continued.

Bull Grass or Chufa (<u>Cyperus</u> <u>esculentus</u>)				
Small tubers eaten		Alluvial bottoms	Southeastern Indians	Yanovsky 1936:9
Oak (<u>Quercus</u> sp.)				
Acorns eaten in the form of bread; oil used in cooking; used in medicine; used in dye	Numerous species used; good crops vary from year to year	Bluff and ridge forest; alluvial woods	Most Southeastern and Eastern Indians	Swanton 1979:245 Yanovsky 1936:18 Yarnell 1964:69-70
Onion, Wild or Meadow Garlic (<u>Allium</u> <u>canadense</u>)				
Eaten; used in medicine		Alluvial woods	Menomini, Meskwaki, Iroquois and Ojibway	Yanovsky 1936:11 Yarnell 1964:54
Osage Orange (<u>Maclura</u> <u>pomifera</u>)				
Used for bows		Alluvial woods; slopes	Southeastern Indians; eastern Texas	Hudson 1976:273
Partridge-Berry (<u>Mitchella</u> <u>repens</u>)				
Used in medicine; smoked; used for textiles	May be the same plant as the Wintergreen or Teaberry	Bluff and ridge forest	Eastern states	Yanovsky 1936:57 Yarnell 1964:74, 181
Pawpaw (<u>Asimina</u> <u>trilobata</u>)				
Provides textiles such as cords, mats, ropes, split bark bags and fabric; fruit eaten		Alluvial woods; talus slopes	Arkansas, Kentucky and Ohio; Central and Southeastern states; historic Iroquois;	Whitford 1941:9, 22 Yanovsky 1936:26 Yarnell 1964:66, 189
Pea, Wild or Marsh Pea (<u>Lathyrus</u> <u>myrtifolius?</u>)				
Eaten; used in medicine; used as a charm	Boiled and mixed with other vegetables	Alluvial woods; dry soils	Southeastern and Northern Indians	Swanton 1979:269 Yarnell 1964:64, 170
Persimmon (<u>Diospyros</u> <u>virginiana</u>)				
Fruit eaten		Disturbed habitats; bluff and ridge forest	Most Southeastern Indians	Collins 1979 Crawford 1978 Keel 1976 Hudson 1976:285-296
Pine, White (<u>Pinus</u> <u>strobus</u>)				
Pitch used for caulking and waterproofing; wood used for dishes; used in medicine	Young staminate catkins available in spring; inner bark in May and early June	Light fertile loam and sandy soils	Ojibway and Iroquois	Yarnell 1964:52

Table G-1. Continued.

Plum, Wild (Prunus L.) Fruit eaten; used in medicine; used as dye	Several species available	Secondary growth; disturbed areas	Most Southeastern and Eastern Indians	Hudson 1976:296 Yanovsky 1936:32 Yarnell 1964:62, 169
Pokeberry, Common (Phytolacca americana) Young leaves and stalks eaten		Disturbed areas	Iroquois	Yanovsky 1936:23
Prickley Pear (Opuntia Mill.) Fruit eaten		Xeric areas; cedar glades	Virginia	Swanton 1979:272
Puccon (Coon Roots) (Lithospermum canescens) Used in dye; roots boiled and eaten		Sunny slopes; clearings; edge of woods; prairie areas	Southeastern Indians; Ojibway	Swanton 1979:607 Yarnell 1964:184
Purslane, Common (Portulaca oleracea) Seeds ground for flour or mush; leaves used in salads		Disturbed areas	Iroquois	Yanovsky 1936:24
Raspberry, Black (Rubus occidentalis) Berries and shoots eaten; leaves used for tea; used in medicine	Several species utilized	Disturbed areas	Most Eastern and Southeastern Indians	Hudson 1976:286 Yanovsky 1936:34-35 Yarnell 1964:58-59
Sassafras (Sassafras varifolium) Leaves used in soup and tea; used in medicine		Dry areas; edge of woods; disturbed areas; peaty swamps	Southeastern and Eastern Indians	Yanovsky 1936:26 Yarnell 1964:153
"Selagwusti" (Cherokee word) (Erianthus Michx.) Used for arrows		Open areas; disturbed areas	Cherokee	Hudson 1976:274
Sensitive Fern (Onoclea sensibilis) Rootstocks used in medicine		Swamps; muddy depressions	Iroquois and Ojibway	Yanovsky 1936:3 Yarnell 1964:63

Table G-1. Continued.

Serviceberry (Amelanchier canadensis) Berries eaten; used in medicine	Dried for winter	Alluvial woods; hill slopes	Most Southeastern Indians; Ojibway	Hudson 1976:286 Yarnell 1964:56, 190
Skunk Cabbage (Spathyema foetida) Used as an emergency food; leaves and shoots used as greens; used in medicine	Dried or baked to improve taste	Alluvial woods	Iroquois and Seneca	Yanovsky 1936:11 Yarnell 1964:71
Snakeroot (Cimicifuga sp. or Polygala sp.) Pharmaceutical uses; used to treat fevers, toothache and snakebite		Alluvial woods; infrequently on rocky talus slopes	**Appalachian Mountains**	Keel 1976:8 Yarnell 1964:73
Solomon's Seal (Polygonatum biflorum) Pharmaceutical uses; applied to sores, boils and carbuncles		Above terraces and floodplains	**Appalachian Mountains** Iroquois	Yanovsky 1936:14 Keel 1976:8 Yarnell 1964:71
Sourwood (Oxydendrum arboreum) Leaves used as salad		**Edge of woods; open woods**	Southeastern states	Yanovsky 1936:51
Springbeauty (Claytonia virginica) Roots used but specific use is unspecified		Woods; open areas	Eastern Indians	Yanovsky 1936:24
Squash (Cucurbita sp.) Eaten after boiling; made into bread		Disturbed areas	Most Eastern Indians	Swanton 1979:275 Yanovsky 1936:59
Squirrel Corn (Dicentra canadensis) Tubers eaten		**Humus woods on well-drained slopes**	New York	Yanovsky 1936:26
Strawberry, Wild (Fragaria virginiana) Berries eaten; leaves used as a beverage; root used in medicine	Several species utilized	River banks	Most Eastern and Southeastern Indians	Hudson 1976:286 Yanovsky 1936:31 Yarnell 1964:55

Table G-1. Continued.

Sumac (*Rhus* sp.) Provides black, yellow and red dyes; used as a beverage berries eaten, dried for storage	Disturbed areas	Southeastern and Eastern Indians	Swanton 1979:245 Yanovsky 1936:40-41
Sumac (no specific common name) (*Rhus* ?ruphydon) Imparts a blue tint to pottery; used in medicine; smoked; Leaves made into liquid	Disturbed areas	Southeastern Indians	Swanton 1979:245 Yarnell 1964:73
Sumac, Smooth (*Rhus glabra*) Peeled and eaten raw; used as a beverage; used in medicine; smoked	Disturbed areas	Eastern Indians	Yanovsky 1936:40-41 Yarnell 1964:153
Sunflower (*Helianthus annuus*) Used in breads	Alluvial woods	Most Eastern Indians; Early Woodland	Swanton 1979:275 Cowan 1976:Table 3
Sweet Potato, Wild or Wild Morning Glory (*Ipomoea pondureta* L.) Roots eaten	Dry, disturbed areas	Most Southeastern Indians	Hudson 1976:287 Yanovsky 1936:25
Virginia Creeper (*Parthenocissus quiquefolia*) Fruit eaten raw; stalks peeled and boiled then eaten; eaten in times of stress	Alluvial woods; talus slopes slope forest	Midwest	Yanovsky 1936:42 Yarnell 1964:72
Walnut, Black (*Juglans nigra*) Nuts used to dye basketry; oil used as ointment; tree dug out to form canals 40' long x 3' wide x 3'' thick; bark fiber used for burden straps	Alluvial woods; hill slopes	Arkansas; most Southeastern Indians	Swanton 1979;245 261, 265, 605 Yarnell 1964:67 Whitford 9141
Waterleaf, Virginia (Indian Salad) (*Hydrophyllum appendiculatum*) Young shoots eaten as salad; used in medicine; At least one other species available	Woods	Kentucky, Midwest and Northeast; Menomini and Iroquois	Yanovsky 1936:50 Yarnell 1964:54

Table G-1. Continued.

Wintergreen or Teaberry (Gaultheria procumbens)				
Fruit eaten; leaves used as a beverage; seasoning; used in medicine		Bluff and ridge forest	Eastern states	Yanovsky 1936:50 Yarnell 1964:154
Witch Hazel (Hamelis virginiana)				
Used as a beverage and food seasoning; used in medicine	Seeds used as sacred beads	Wood and edge of woods	Iroquois, Ojibway Menomini and Potowatomi	Yarnell 1964:153 Radford et al. 1968: 529-530
Wood-Bethany, Early (Pedicularis canadensis)				
Greens cooked like spinach; used as a love charm; used in medicine	Another species was used in a similar manner	Well-drained woods	Iroquois	Yanovsky 1936:57 Yarnell 1964:74
Wood-Sorrel, Common (Oxalis acetosella)				
Leaves eaten; cooked with sugar to serve as dessert	Other species were also used	Talus slopes; moist woods	Midwest and Northeast	Yanovsky 1936:40 Yarnell 1964:54
Yaupon (Ilex vomitoria)				
Leaves used as a black drink	Apparently this was a trade item	Swamps; along streams	Southern Indians	Yanovsky 1936:41 Medsger 1972:215

Abbreviated Curriculum Vitae

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Educational Experience

1965 University of Texas
B.A. in Anthropology, minor in Geology

1968 University of Texas
M.A. in Anthropology, minor in Geology

1974 University of Arizona
Ph.D. in Anthropology

Summary of Past Experience

1961 - present Archaeological research experience in Texas, Israel, Arizona, France, and Kentucky.

1965 - present Undergraduate and graduate teaching, University of Texas, University of Arizona, University of Kentucky

Memberships

American Anthropological Association
Society for American Archaeology
Union International de Sciences Prehistorique et Protohistorique
Texas Archaeological Society

Recent Major Publications

1969 Test Excavations at Amistad International Reservoir, Fall 1967. Papers of the Texas Archaeological Salvage Project, No. 16.

1971 A review of LLano Estacado archaeology and ethnohistory. Plains Anthropologist, Vol. 16, No. 52, pp. 85-104.

1975 Excavation and recording of human physical remains.

In *Field Methods in Archaeology*,
by T.R. Hester, R.F. Heizer, and J.A. Graham,
Chapter 8, pp. 163-182. Mayfield Publishing
Company, Palo Alto, California.

1975 Sources of bias in processual data: an appraisal.
In *Sampling in Archaeology*,
edited by James W. Mueller, pp. 26-32. University
of Arizona Press, Tucson.

1975 Lithic technology as a means of processual inference.
In *Lithic Technology, Making and
Using Stone Tools*,
by Earl Swanson, pp. 14-34. Mouton, The Hague.

1976 Terminal Pleistocene cultural adaptations in southern Texas.
In Pretirage, Colloque XVII, Habitats Humains Anterieurs a
L'Holocene en Amerique. Union Internationale des Sciences
Prehistoriques et Protohistoriques, IXe Congress, Nice, France.

1979 Excavations at Four Archaic Sites in the Lower Ohio Valley,
Jefferson County, Kentucky. Occasional Papers in Anthropology
No. 1, Department of Anthropology, University of Kentucky,
Lexington, 1076 p (editor and contributing author).

Technical Reports

1967 - 1979 19 reports. Geographical areas: Texas, Arizona, and Kentucky.

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<u>Educational Experience</u>

1970 North Texas State University
B.A.

1976 University of Texas at Austin
Ph.D. in Anthropology

<u>Summary of Past Experience</u>

1975 - 1980 Professor
1971 - 1975 Staff Archaeologist

<u>Memberships</u>

American Anthropological Association
The Latin American Anthropological Group (L.A.A.G.)
The Archaeological Institute of America
Society of the Sigma Xi (Associate Member)
Society for American Archaeology
Plains Anthropological Society
Texas Archaeological Society
Association for Field Archaeology
Sociedad de Arqueologia Chilena, Santiago, Chile

<u>Recent Publications</u>

1973 - 1979 9 Articles.
1976 - 1978 . 2 Books

<u>Technical Reports</u>

1972 - 1979 8 Reports. Geographical areas: Texas, South America, North American Plains.

Complete vitae available upon request.

VITAE

Jared K. Funk

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Education

University of Kentucky, B.A. in Anthropology 1973-1977

University of Kentucky, M.A. in Anthropology 1978-1981. Thesis Topic: Documented Chipped Stone Tool Manufacture Observed Among Native North American Indians

Honors

Dean's List Spring, 1976
Teaching Assistantship 1979

Major Subjects

History of North America Archaeology
Cultural Resource Management
Kentucky Prehistory
History of Anthropological Theory

Archaeological Work Experience

5-2-1981 to 10-25-1981	Field-Lab Coordinator. Hurricane Branch Archaeology Project. University of Kentucky. Dr. Tom Dillehay, Principal Investigator.
9-25-1980 to 5-1-1981	Assistant Field Supervisor, Ft. Campbell Culture History Survey, University of Kentucky. Dr. Michael B. Collins, Principal Supervisor.
2-1 to 8-27, 1980	Staff Archaeologist, Office of Kentucky State Archaeology, University of Kentucky. Dr. Berle Clay, Principal Supervisor.
9-15 to 12-15, 1979	Field Director (crew of 30), L.A.U.R.D. Archaeology Project Phase II, Montana State University. Dr. Tom Roll, Principal Supervisor.

5-30 to 8-29, 1979	Crew Chief (crew of 8), L.A.U.R.D. Archaeclogy Project Phase I, Montana State University. Dr. Tom Roll, Principal Supervisor.
5-30 to 8-15, 1978	Fieldworker, Carrier Mills, Southern Illinois University Dr. Dick Jeffries, Principal Supervisor.
8-13 to 12-7, 1977	Fieldworker, Patoka Reservoir, Indiana State University. Cheryl Munson, Principal Supervisor.
5-29 to 8-1, 1977	Fieldworker, Southwest Jefferson County Archaeology Project, University of Kentucky. Dr. Michael B. Collins, Principal Supervisor.

Pertinent Skills

C.R.M. Report Preparation
Lithic and Ceramic Data Analysis
Excavation Strategy
Field and Lab Coordination
Drafting Contract Proposals
Computer: S.P.S.S. and SCRIPT

References

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Dr. Michael B. Collins
Anthropology Department
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Dr. Tom Roll
Sociology/Anthropology Department
Montana State University
Bozeman, Montana

Abbreviated Curriculum Vitae

Thomas W. Gatus

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University of Kentucky
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Educational Experience

1975 - 1979 University of Kentucky

1974 Bellarmine College, Louisville, Kentucky
B.A. in Sociology

Summary of Past Experience

1975 - present Archaeologist (excavations/surveys)
1976 - present Cultural Resource Management
1970 Data Processing Technician

Memberships

Society for American Archaeology
William S. Webb Society
Southeastern Archaeological Conference

Publications

1979 The occurence and distribution of chert bearing deposits in the Land Between the Lakes Area of Western Kentucky. Kentucky Archaeological Association, Bulletin 11:24-45.

A review and comment on surface and subsurface survey methodologies operationalized in Kentucky. Proceedings of the 35th Southeastern Archaeological Conference (1978), Bulletin 22. in press.

1978 Karst topography: a factor associated with Paleo-Indian settlement in certain areas of Kentucky. Tennessee Anthropologist 3 (2): 203-210.

Technical Reports

1976 - 1978 11 reports. Geographic area: Kentucky.

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VITA

A. GWYNN HENDERSON

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EDUCATION:

B.A. with honors, University of Delaware, 1975
Presently enrolled as graduate student, Department of Anthropology, University of Kentucky. MA expected Fall 1981

RESEARCH INTERESTS:

Mesoamerica--Basin of Mexico, Postclassic pottery
North America--Mississippian period, pottery and mortuary practices
Cultural Resource Management

PROFESSIONAL EXPERIENCE:

FIELD WORK:

6/74-8/74	Xaltocan Project: Northern Basin of Mexico, University of Delaware Field School, Dr. Robert K. Alexander, Investigation of Pre-Hispanic hydraulic agriculture, Post classics.
9/75-1/76	Xaltocan Project: Northern Basin of Mexico, CISINAH, Dr. Robert K. Alexander, Investigation of Pre-Hispanic hydraulic agriculture, Postclassic
9/76-12/76	Tellico Archaeological Project: Tennessee, University of Tennessee, Dr. Gerald Schroedl, Dallas Phase, Mississippian
6/77-8/77	Southwest Jefferson Floodwall Project: Kentucky, University of Kentucky, Dr. Michael B. Collins, Early Archiac to Late Archaic
8/77-12/77	Patoka Reservoir Archaeological Salvage Project: Indiana University, Cheryl Munson, Archaic
5/78-8/78	Carrier Mills Archaeological Project: Illinois, Southern Illinois University, Drs. David Braun and Brian Butler, Woodland and Mississippian (Crew Chief)

5/79-6/79 Liberty Hall Archaeological Testing Project: Frankfort, Kentucky, Kentucky Heritage Commission-Colonial Dames of Kentucky, Robert P. Fay, Historic

7/80 Two three day surveys for University of Kentucky, Cultural Resource Assessment Program, Lexington, Kentucky Nancy O'Malley

5/81-6/81 Hurricane Branch Archaeological Project: Tennessee, University of Kentucky, Drs. Michael B. Collins and Tom D. Dillehay, Middle Woodland.

LABORATORY WORK:

6/74-8/74 Acolman Laboratory for Archaeological Research: University of Delaware Field School, under the direction of Dr. Robert K. Alexander

9/75-1/76 Acolman Laboratory for Archaeological Research: CISINAH, under the direction of Dr. Robert K. Alexander

2/77-3/77 Adaptation of Postclassic ceramics for computer analysis with Dr. Robert K. Alexander

1/78-5/78 Flotation of ethnobotanical and carbon-14 samples for the Southwest Jefferson Floodwall Project, as well as general sorting, classification and lab work.

6/79-8/79 Analysis of Epiclassic and Post classic ceramics from Xochicalco, Morelos, under the direction of Kenneth G. Hirth

7/80-8/80 Data input on CRT for University of Kentucky, Cultural Resource Assessment Program, Lexington, KY.

7/80- present Ceramic analyist for Hurricane Branch Archaeological project. Middle Woodland ceramics.

GRANTS AND FINANCIAL AID:

1978 Research Assistantship, University of Kentucky, Spring Semester.

1979 Traineeship in Cultural Resource Management, University of Kentucky, Spring Semester

1979-81 Teaching Assistantship, University of Kentucky, School Year.

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

Society for American Archaeology

PUBLICATIONS & REPORTS:

Henderson, A. Gwynn, David Pollack and S. Alan Skinner
1980. A Cultural Resources Overview of the Western New York Nuclear Service Center. Report prepared for Argonne National Laboratory by Environmental Consultants, Dallas, Texas.

REFERENCES:

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EDUCATIONAL EXPERIENCE

1974 University of Texas at Austin
B.A. in Archaeological Studies

1979 University of Kansas
M.A. in Anthropology

SUMMARY OF PAST EXPERIENCE

1979-present	Staff archaeologist
1977, 1978	Research assistant
1972-1977	Archaeologist

MEMBERSHIPS

Society for American Archaeology
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Southeastern Archaeological Conference

TECHNICAL REPORTS

1974 - present 15 reports. Geographical areas: Texas, Kansas, Missouri and Kentucky.

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EDUCATIONAL EXPERIENCE

1977	Beloit College B.A. in Anthropology
1978-present	University of Kentucky M.A. Candidate

SUMMARY OF PAST EXPERIENCE

1974-1976	Research Assistant
1977-present	Archaeologist (13 excavations/surveys)

TECHNICAL REPORTS

1978-present	14 reports. Geographical areas: Kentucky, Illinois Iowa, New York

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Educational Experience

1981 University of Kentucky, Lexington, Kentucky
B.S. in Anthropology.

Summary of Past Experience

1977 - 1981	Field Archaeologist
1978 - 1981	Artifact Illustrator Draftsmen
1978 -	Lab Assistant

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Educational Experience

1980-present	University of Kentucky, Department of Anthropology (M.A. candidate)
1973-1977	University of Massachusetts - Amherst (B.A. anthropology)

Summary of Past Experience

1975-1980	13 excavations/surveys
1973, 1974, 1979	Research Assistant
1973, 1975	Draftsman

Technical Reports

1979-1980	4 technical reports. Geographic area: Arizona, California

Complete vita available upon request.